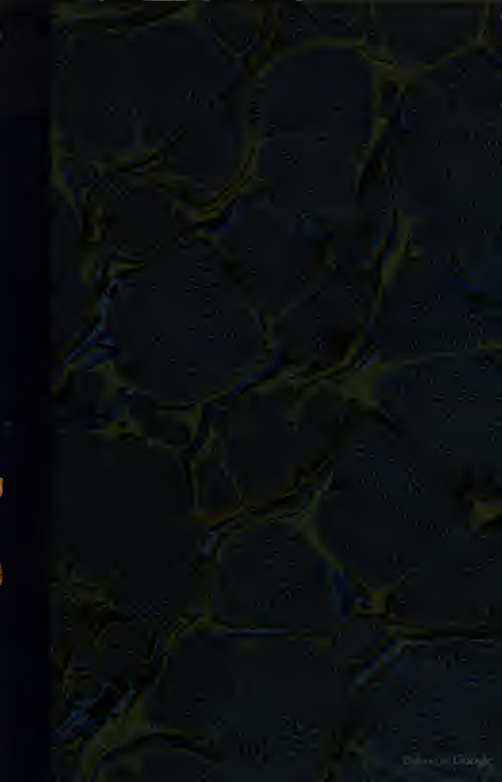

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GENERAL VIEW

OF THE

AGRICULTURE

OF THE

COUNTY OF STAFFORD;

WITH

OBSERVATIONS ON THE MEANS OF ITS IMPROVEMENT.

BY WILLIAM PITT,

OF PENDEFORD, NEAR WOLVERHAMPTON;

WITH THE ADDITIONAL REMARKS OF SEVERAL RESPECTABLE
GENTLEMEN AND FARMERS IN THE COUNTY.

DRAWN UP BY ORDER OF

THE BOARD OF AGRICULTURE.

THE SECOND EDITION.

Ye generous Britons, venerate the plough;
And o'er your hills, and long withdrawing vales,
Let Autumn spread his treasures to the sun,
Luxuriant and unbounded as the sea.

Be gracious, Heav'n! and when laborious man
Has done his part, ye fostering breezes blow;
Ye softening dews, ye tender showers, descend!
And temper all, thou world-reviving Sun,
Into the perfect year. Nor ye who live
In luxury and ease, in pomp and pride,
Think such like themes unworthy of your care.

So with superior boon may your rich soil,
Exuberant, Nature's better blessings pour
O'er every land; the naked Nations clothe,
And be th' exhaustless granary of a world!

THOMSON.

LONDON:

PRINTED FOR RICHARD PHILLIPS, BRIDGE STREET;
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1808.

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ADVERTISEMENT.

THE desire that has been generally expressed, to have the AGRICULTURAL SURVEYS of the KINGDOM reprinted, with the additional Communications which have been received since the ORIGINAL REPORTS were circulated, has induced the BOARD OF AGRICULTURE to come to a resolution to reprint such as appear on the whole fit for publication.

It is proper at the same time to add, that the Board does not consider itself responsible for every statement contained in the Reports thus reprinted, and that it will thankfully acknowledge any additional information which may still be communicated.

N. B. *Letters to the Board, may be addressed to Sir* JOHN SINCLAIR, *Bart. M. P. the President, No.* 32, *Sackville-Street, Piccadilly, London.*

PRELIMINARY OBSERVATION

TO THE

STAFFORDSHIRE REPRINTED REPORT.

THE Board of Agriculture having resolved, when it first assembled, on the 4th of September, 1793 (in consequence of an address from the President), that their first object ought to be, to ascertain facts; without which no theory or system of reasoning, however plausible, could be depended on; and that for attaining so important an object, it would be necessary to examine into the agricultural state of all the different Counties in the United Kingdoms; and to inquire into the means, which, in the opinion of professional and well-informed men, were the most likely to promote either a general system of improvement, or the advantage of particular districts; and that by employing a number of proper persons for that purpose, by circulating their Reports, previous to their being published, and by requesting the additional remarks and observations of those to whom such communications were sent, it was probable that no important fact, or even useful idea, would escape notice.

In consequence of this plan being resolved on by the Board, a number of individuals were nominated for the purpose of recording the proposed inquiries, and amongst others, myself was ultimately fixed upon, to take an Agricultural Survey of the County of Stafford: my appointment was not an early one, and the Survey was delayed and protracted by other avocations in which I was previously engaged. At length, however, a Report was sent to the Board, and by them printed, and circulated through the County; which has since received remarks and additions from some respectable Gentlemen and Farmers, which are now incoporated with the original matter, and the whole thrown into somewhat another form, agreeable to a plan chalked out by the Board; and in which form it is here presented to the Public.

I understand that there is reason to believe, the accounts of the other districts in the kingdom will soon be completed; in which case, a greater mass of agricultural information will have been collected in the space of a little more than two years, than probably can be found in all the preceding publications on that subject put together.

Next to collecting information, the improvement of a country must depend upon a proper spirit of exertion, to bring the knowledge thus accumulated into action; and in addition to former motives, it may now be stated, that the Legislature has at length taken the plough and the spade under its immediate protection.

Exertion, and capital, are the two main springs of improvement; there is little risk of any deficiency in the latter, unless our capital should be diverted from its natural channel to remote and foreign speculations; the best mode of preventing which seems to be,—to make the kingdom known to its inhabitants, and to point out the benefit which may arise from improving our own territory; which subjects form the principal object of the Board in publishing the information they have accumulated.

Considering it as an embellishment, and a relaxation of the mind from the fatigue of constant attention to one subject, the Writer has introduced a few remarks upon Natural History and Botany, and even on some other subjects not immediately or closely connected with Agriculture. This being done with brevity, will not take up much room. He has farther to express his acknowledgments and obligations to the following Gentlemen, Clergymen and others, for their assistance, recommendation, and the information which he has received from them, and by their means, in this business;

Mr. Bradburne, Pipehill, near Lichfield.
Rev. Dr. Falconer, Lichfield.
Rev. T. Gisborne, Yoxall-lodge, Needwood-forest.
Rev. Mr. Dickenson, Rector of Blymhill.
Rev. Mr. Wright, Bradley, near Stafford.
Josiah Wedgwood, Esq. Etruria.
John Sneyd, Esq. Belmont, near Leek.
Mr. Princep, Croxall.
Mr. Samuel Wyatt, Burton on Trent.
Mr. Lockley, Boscobel.
Mr. Corser, Bushbury, near Wolverhampton.
Mr. Miller, Dunstall, near Wolverhampton.
Mr. Joseph Hordern, Saredon, near Wolverhampton.
Mr. Ellison, Hattons, near Wolverhampton.
Mr. Higgs, Cronkhall, near Wolverhampton.
Mr. Ferriday, Ettingsall-park, near Wolverhampton.
Mr. Fowler, Erdington, near Birmingham.
Mr. Curtis, Walsall.
Mr. Harding, Ashley-heath, near Eccleshall.
Mr. Harvey, Dunstall, near Abbots Bromley.

Mr. BROWMAN, at Lord DONEGALL's, Fisherwick.
Mr. JOHN SMITH, Haunton, near Tamworth.
Mr. WILLIAM WEBB, Newbould, near Burton on Trent.
Mr. JENKINSON, Stoke, near Stone.
Mr. GIBBS, Leek.
Sir EDWARD LITTLETON, Bart. Teddesley-park.
GEORGE TOLLET, Esq. Swinnerton-hall, near Stone.

W. PITT.

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AGRICULTURAL SURVEY

OF

STAFFORDSHIRE.

CHAP. I.

GEOGRAPHICAL STATE AND CIRCUMSTANCES.

SECT. I.—SITUATION AND EXTENT.

STAFFORDSHIRE is an inland county, situate near the centre of the kingdom. It is bounded on the north, by Cheshire and Derbyshire; on the east, by Leicestershire; on the south, by Warwickshire and Worcestershire; and on the west, by Shropshire. It lies, according to Yates, between 52° 23′ and 53° 13′ north latitude, and between 1° 29′ and 2° 27′ west longitude from London; this place (Pendeford) being in this Survey placed in latitude 52° 37½′ north, and longitude 2° 4′ west. I found myself, by a pretty accurate observation, made December 20, 1790, being the shortest day, and very fine, about noon, the latitude of Pendeford to be 52° 35½′, which varies from the above account only two minutes. The following are the particulars of this observation:

	deg.	min.
Sun's meridian latitude to upper limb,	14	15
Deduct sun's semidiameter,	0	16
Deduct for refraction,	0	3½
Deduct,	0	19½
Remains meridian altitude of sun's centre,	13	55½
Add sun's declination,	23	29
Sum, complement of latitude,	37	24½
Consequently, latitude of Pendeford,	52	35½
Sun's central altitude same day at 11 and 1 o'clock,	12	40

The greatest length of Staffordshire, from the north part of Ax-Edge-common to the south part of Woods Eaves (south of the Severn), from N.N.E. to S.S.W. is 60 English miles; and the greatest breadth, from the junction of the Trent and Dove, near Newton Solney, to the west point of Terley-heath, near Drayton, nearly from east to west, is 38 miles: the county contains in gross 1220 square miles, and 780,800 statute acres.

* * *

SECT. II.—DIVISIONS.

This county was a part of the ancient Cornavii. Under the Saxon Heptarchy, it belonged to the kingdom of Mercia. In the modern political arrangement of the kingdom, it is in the Oxford circuit; and respecting its ecclesiastical government, within the diocese of Lichfield and Coventry. It is divided into five hundreds: 1. Totmanslow to the north; 2. Pyrehill to the north-west; 3. Cuddlestone to the south-west; 4.

Offlow to the east; and 5. Seisdon to the south. It contains 24 market towns, one or two other places where fairs are held, 181 parishes; but of these, more particulars hereafter; and probably about 250,000 inhabitants.

The following is a list of the market towns and parishes of this county.

Market Towns, Ancient and Modern.

		Market Days.
1.	Stafford, the county town,	Saturday
2.	Lichfield,	Friday
3.	Wolverhampton,	Wednesday
4.	Walsall,	Tuesday
5.	Burton on Trent,	Thursday
6.	Uttoxeter,	Wednesday
7.	Newcastle,	Monday
8.	Leek,	Wednesday
9.	Stone,	Tuesday
10.	Cheadle,	Saturday
11.	Eccleshall,	Friday
12.	Rudgeley (small note),	Tuesday
13.	Tamworth,	Saturday
14.	Tutbury (small note),	Tuesday
15.	Abbot's Bromley (ditto),	Tuesday
16.	Breewood (very trifling),	Friday
17.	Penkridge,	Tuesday
18.	Cannock—declined	
19.	Betley—declined	
20.	Wednesbury (for fowls, butter, &c.)	Saturday
21.	Burslem,	In the Potteries, now considerable markets for provisions
22.	Hanley-green,	
23.	Lane-end,	
24.	Longnor (fowls, butter, &c.)	Wednesday

A List of the Parishes of Staffordshire.

[By the term parish, is here meant a tract of land having a place of worship, and united, in some degree, by a common or mutual interest, without regarding the ecclesiastical constitution, or dependence upon a superior or mother church.]

In this sense, Totmanslow hundred contains 40 parishes.

1. Alstonefield
2. Alveton
3. Bagnal
4. Blore
5. Bradley in the Moors
6. Bramshall
7. Butterton
8. Caulton
9. Caldon
10. Caverswall
11. Cheadle
12. Croxden
13. Checkley
14. Chedleton
15. Dilhorne
16. Draycott in the Moors
17. Endon
18. Elkstone
19. Ellaston
20. Flash
21. Gratwich
22. Grindon
23. Horton
24. Ilam
25. Ipstones
26. Kingston
27. Kingsley
28. Leek
29. Longnor
30. Leigh
31. Mathfield
32. Oakover
33. Onecote
34. Meerbrook
35. Rocester
36. Sheen
37. Warslow
38. Wetton
39. Waterfall
40. Uttoxeter

Pyrchill hundred contains 47 parishes.

1. Abbot's Bromley
2. Adbaston
3. Ashley
4. Audley
5. Blithfield
6. Barlaston

7. Blurton

Google

7. Blurton
8. Betley
9. Burslem
10. Bucknall
11. Biddulph
12. Colwich
13. Colton
14. Chebsey
15. Ellenhall
16. Eccleshall
17. Broughton
18. Fradswell
19. Fulford
20. Gayton
21. High Offley
22. Hanley
23. Keel
24. Lane-end
25. Muckleston
26. Maer
27. Madeley
28. Milwich
29. Marston
30. Newcastle
31. Norton in the Moors
32. Stoke on Trent
33. Stafford
34. Stowe
35. Sandon
36. Stone
37. Seighford
38. Standon
39. Swinnerton
40. Ronton
41. Tixall
42. Thursfield
43. Talk on the Hill
44. Trentham
45. Whitmore
46. Woolstanton
47. Weston on Trent

Cuddlestone hundred contains 23 parishes.

1. Acton
2. Baswich
3. Breewood
4. Bednall
5. Blimhill
6. Bradley juxta Stafford
7. Cannock
8. Coppenhall
9. Castle Church
10. Dunston
11. Forton
12. Gnoshall
13. Haughton
14. Lapley
15. Norbury
16. Penkridge
17. Rudgeley
18. Sherif Hales
19. Stretton
20. Shareshall
21. Weston under Lizzard
22. Wheaton Aston
23. Churcheaton

Offlow hundred contains 51 parishes.

1. Alrewas
2. Armitage
3. Aldridge
4. Burton on Trent
5. Barton under Needwood
6. Bloxwich
7. Barr
8. Clifton Campville
9. Drayton Bassett
10. Darlaston
11. Elford
12. Farewell
13. Hanbury
14. Hamstall Ridware
15. Harbourne
16. Hammerwich
17. Haselour
18. Harleston
19. Hints
20. Handsworth
21. Longdon
22. King's Bromley
23. Lichfield St. Chad's
24. Lichfield St. Michael's
25. Marchington
26. Maveston Ridware
27. Newborough
28. Norton under Cannock
29. Pipe Ridware
30. Pelsall
31. Rolleston
32. Rowley Regis
33. Rushall
34. Smethwick
35. Shenstone
36. Statfold
37. Tutbury
38. Tatenhill
39. Thorpe Constantine
40. Tamworth
41. Tipton
42. Wichnor
43. Whittington
44. Wigington
45. Weeford
46. Walsall
47. Wednesfield
48. Willenhall
49. Wednesbury
50. West Bromwich
51. Yoxall

Seisdon hundred contains 20 parishes.

1. Amblecott and Brierly-Hill
2. Areley Over
3. Bilston
4. Broome
5. Bobbington
6. Bushbury
7. Codshall
8. Clent
9. Enville
10. Himley
11. Kinfare

12. Kingswinford
13. Pattingham
14. Patteshall
15. Penn
16. Sedgeley
17. Tettenhall
18. Trysull
19. Wolverhampton
20. Wombourne.

		Parishes.
Total,	Totmanslow hundred	40
	Pyrehill hundred	47
	Cuddlestone hundred	23
	Offlow hundred	51
	Seisdon hundred	20
	Total parishes in the county	181

SECT. III.—CLIMATE.

The air of this county I think sharp, and the cold perceptibly to the senses greater than in many other counties, particularly than in the neighbourhood of London, having often had an opportunity of making a quick comparison. The climate too may be termed inclining to wet*. The annual rains are, I believe, supposing them to stagnate on the ground without waste or evaporation, upwards of thirty-six inches; those of London do not exceed twenty or twenty-one inches; and at Upminster, in Essex, they are only nineteen inches and a quarter. The rains of Lancashire amount to forty-two inches, and those of Ireland to more. I believe it will generally hold good as a rule, that the annual rains on the west side of the kingdom are at least double to those on the east side; which I attribute to its being more exposed to the condensation of aqueous vapours arising from the vast expanse of the Atlantic ocean. I have no doubt also, but that a vast deal more moisture in this county falls on high grounds than on low, the high grounds being, from situation, more adapted to break, dissolve, and attract the aqueous vapours afloat in the atmosphere. Accordingly we often find, after rain, great torrents of water rushing down from the high grounds into the vallies: it is more particularly certain, that the high grounds receive a greater quantity of snow in winter than the plains of less elevation.

---

* This, in the north end of the county, most probably arises from a ridge of mountainous land, lying to the West, which attracts the clouds in passing.—*S.*

The aspect of this country is various. The north part rises gently in small hills, which, beginning here, run through the heart of England, like the Appennines in Italy, in a continued ridge, rising gradually higher and higher into Scotland, under different names: here called Moorlands, then Peak, then Blackstone Edge, then Craven, then Stanmore; and then, parting into two horns, are called Cheviots. The Moorland is a rough dreary cold tract, the snow lying long on it. The people here observe, that the west wind always brings rain; but the east and south winds make fair weather, unless the wind turns about from the west to the south, which then continues rainy*. The middle and south part of the county are generally level, or with only gentle eminences. To this, however, there are some exceptions; as the limestone hills of Dudley and Sedgeley, which furnish an inexhaustible supply of that material, and great part of it of excellent quality. The Quartzose, or Ragstone-hills of Rowley, furnish an excellent material for roads and pavements. The hills of Clent and Barbeacon, besides many others of less elevation, as the high grounds on Cannock-heath, the hills of Bushbury and Essington, formed chiefly of, or at least containing great quantities of gravel, Kinfare Edge, Tettenhall-wood, and some situations near Enville, also command extensive prospects. In this place it may not be improper (as it will not take up much room) to state a few particulars of a subject doubtless curious; and which, though not immediately connected, is yet not altogether foreign to the business in hand. These particulars are, the perpendicular elevation of some of the high summits, medium plains, and lowlands, of this inland county, above the level of the tide of the ocean; the Writer of this having had many opportunities of ascertaining these particulars, in many cases very accurately, and in others nearly. The lowest points of land in the county are, probably, the Severn at Over Areley, and the Trent where it receives the Dove below Burton.

---

* From a series of observations, taken here these twenty years, it is proved that most rain has come from the south-west.—*S.*

Elevation of sundry Points of Land in this County, perpendicularly above the Level of the Tide of the Thames at Brentford.

Particular Spots.	Elevation.	
	Ft.	In.
Banks of the Severn at Over Areley	60	0
———— Tame at Tamworth	150	0
———— Trent at its junction with the Dove	100	0
———— summit of the Staffordshire Canal	385	0
———— summit of the Birmingham Canal	500	0

Banks

Particular Spots.	Elevation.	
	Ft.	In.
Banks of the summit of the Wyrley Canal, at Essington Wood New Colliery	560	0
Summit of Bushbury-hill	650	0
——— Barr-beacon	750	0
——— the highest peak of Rowley-hills	900	0
——— the Grand Trunk Canal	420	0
——— a hill called Bunster, near Ilam, in the Moorlands	1200	0
——— Wever-hills, and some other of the highest peaks in the Moorlands	1500	0

Many of the above are by actual observation, and others by estimate only.

Hence it appears, that even in the centre of the kingdom few spots of plain or cultivated country are so much elevated as to be 200 yards perpendicular above the level of the sea; and that it by no means follows of course, that the highest spots of ground are far within land, unless such inland situations contain hills or mountains, the summits of mountains near the coast far overtopping the champaign county, though remote from the sea. I have observed that the Wrekin and Clee-hills of Shropshire, whose bases are upon the lowlands near the Severn, have, nevertheless, their summits rising considerably above the hills in the south of Staffordshire, from whence they are seen; and the summit of Snowden, though near the coast, I believe to be several hundred yards perpendicularly higher still.

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SECT. IV.—SOIL AND SURFACE.

The soil of this county (and probably that of every other district in the kingdom, of equal extent) is various: the arable soils may, in general, be divided into, first, the stiff and strong, clayey (argillaceous); secondly, the loose and light, sandy (arenaceous); thirdly, although the county has no chalk, yet in the limestone districts, lime earth (or calcareous); fourthly, the mixed, or compound soil or loam, composed of the above, with the addition of stones and other matter *(terræ compositio)*. Also, some uncultivated and other spots contain a thin, light, black earth, of the nature of peat, generally lying upon gravel: this, when pulverized and dry, is very light; but when thoroughly wet, is so retentive of moisture as to resemble mud. The meadow soils are, in some places, similar to the arable, with the addition of the sediment of water when within reach of streams; in other places composed of peat earth of different thicknesses to several feet, sometimes containing trunks of trees*. This peat earth seems to consist principally of the decayed roots of aquatic vegetables, but when drained, consolidated, and meliorated, by top-dressing or irrigation, becomes valuable meadow and pasture land: the surface of this kind of land will, upon draining, sink several inches.

The first general division of clay soils consists of two varieties: first, the strong, stubborn, harsh, tenacious clay, or clay loam; secondly, the more mild, tractable, or friable marl or loam. The sandy soils are more or less light, and in some degree intermixed with loam, gravel, or other matter; the mixed soils are also various, and may be termed loam, gravelly loam, sandy loam, &c. according to circumstances.

---

* Many curious specimens have been found of late years near Stonall, in the parish of Shenstone.—*Rev. S. Shaw.*

The excellency of all good soils, probably depends on the component parts being intermixed in a happy proportion; in their being of a sufficient thickness upon the subsoil or understratum; in the composition of such understratum being neither too solid or compact to retain and stagnate all the falling moisture, nor too porous to let it pass off too quick; and in the surface lying with a proper aspect to receive the solar rays, and to let off the superabundant moisture. A large proportion of clay gives too much tenacity, and retains too much water. Where sand predominates, the soil being too porous, suffers the water to pass through, or evaporate, and retains too little. Marl and calcareous earth are excellent correctors of both these defects. Stagnant water, by its chillness and want of motion, is death to vegetation: hence the necessity of draining wet soils. A due admixture of vegetable matter enriches the compost, and the action and heat of the solar rays upon the whole mass, bring on a gentle fermentation, and give life and vigour to the latent and prolific principles of vegetation contained therein. Where nature has left her work unfinished, it is the business of art, and of the farmer's profession, to assist and forward her operations, and to assimilate, as much as possible, such unfinished spots to those which she has left nearest perfection: he who does this in the most rational and complete way, is the best farmer.

Division

Division of Soils.

	Acres.
The gross acres of the county, as stated before, are about	780,800
Deduct for roads, lakes, pools, ponds, rivers, canals, cities, towns, villages, buildings and yards, one acre in twenty,	39,040
Waste lands, forests, woods and impracticable land, ...	141,760
Deduct	180,800
Remains cultivated land	600,000
Of the waste and forest lands, it is probable that the reclaimable part amounts to	100,000

Of the 600,000 acres of cultivated land, in which class I mean to include the pasture part of parks, I estimate 100,000 acres may be meadow and pasture, and 500,000 acres arable; the arable land may be reckoned 200,000 acres of clay loam, or more friable mixed loam, 200,000 acres of gravelly or sandy loams, or other mixed, including calcareous soils; and the remainder, or 100,000 acres of light sandy, gravelly, or other soils, which though not perhaps wholly adapted to, are yet capable of producing turnip.

SECT. V.—MINERALS.

THE mines of this county are valuable and extensive, and in some articles may fairly be pronounced inexhaustible*. The coal land of Staffordshire, which has been proved such, and where the existence of that mineral, near enough the surface to be easily raised, has been ascertained, contains a space of about 50,000 acres: of this space the quantity exhausted by consumption, from the earliest times to the present day, does not exceed a tenth of the whole; and though the scarcity and advance in price of this article, have been complained of, the scarcity of it has been owing to local causes; and the advance in price has perhaps been no more than a just proportion to the advance in the price of labour, and the machinery necessary in

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* The mines of coal, lime and ironstone, upon the estates of Lord Dudley, are very considerable and extensive: to these mines are in a great

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a great measure owing, the immense population of the parish of Sedgeley, as stated under the article, Political Economy, Chap. XV. such population being in a great degree supported by employment therein or thereon depending.

These mines are from their nature almost inexhaustible; those of coal, as now worked, laying in stratums of 8, 10, and even 12 yards in thickness; and the limestone, consisting of the solid masses of extensive mountains, whose bases are upon the same materials continued to an unknown depth: this stone in some places is of a marble quality, and capable of receiving a good polish; in others composed in a great measure of helmintholothi, or petrified marine substances of the animal kind, as cardium, millepora, &c. The lime produced from either, is of a fine white, and excellent quality, the coal and ironstone, is also of a first rate quality.

These mines could never have been worked to their present extent but by means of the artificial navigable canals, carried not only through them in various directions, but even tunnelled under the limestone mountains; which has enabled the workmen to undermine such mountains, and without removing the surface soil, to hollow out the stone in huge caverns, some of which penetrate upwards of 300 yards from the canals under their bases, and are in height and breadth of large dimensions. Large quantities of lime are carried from hence to Birmingham, and elsewhere, for building, and great quantities are used for manures; for which latter purpose, exclusive of the water carriage, it is sometimes fetched by land conveyance to the distance of 15 miles.

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the trade. In the south of the county the coal country extends in length from Cannock-heath (including a part of that waste) to near Stourbridge, and in breadth from Wolverhampton to Walsall. In the north of the county, the neighbourhood of Newcastle and the Potteries, Lane-end, Holly-bush, and again in the neighbourhood of Cheadle and Dilhorne. The country producing limestone is still more extensive; at Sedgeley and Dudley Castle Hills, Rushall and Hayhead, but above all, on the north-east Moorlands and banks of the upper parts of the Dove, where the greatest consumption or length of time could scarce apparently lessen the immense quantity. In this latter district are some veins of alabaster, which is also dug between Needwood Forest and Tutbury. Of freestone here are very good and extensive quarries. Bilstone affords a freestone of very fine grit, fit either for mouldings, building, or grindstones of the finer sort, for which last purpose it is excellently adapted. Gornal, near Sedgeley, has also plentiful quarries of a coarser and cheaper freestone, used for the same purposes as that of Bilstone. Tixall produces an excellent and durable building freestone, which is easily raised in blocks of almost any dimension; and the same article is again found at Wrottesley, Breewood-park, Pendeford, and a great many other places in the county.

Iron.—The strata of iron ore in the neighbourhood of Wednesbury, Tipton, Bilston, part of the parish of Sedgeley, and other parts of the coal country, are very extensive. These strata generally lay under a stratum of coal, and have occasioned some very considerable iron-works to be lately established on the banks of the Birmingham Canal, where the iron trade is very much increasing; and it is to be hoped the capital, spirit of enterprise, and exertion of our iron-masters will, in time, produce this necessary article in sufficient quantity to preclude the necessity of an importation from abroad; or at least to lessen the quantity of such importation, the balance of trade in which is very much against this country.

In these mines of coal, lime, and iron, and in the founderies, blast-furnaces, slitting-mills, and other branches of the iron trade, great numbers of workmen are employed, and the extension of the iron trade in particular, is of great consequence to the interests of this kingdom. The extent of the iron trade in all its varieties, wrought and unwrought, for agricultural and other internal purposes, and for home consumption and exportation, under its innumerable shapes and forms, is now so very great, as to rival even that of the great staple, wool, and to make the superiority of the latter somewhat questionable; and from the abundance of iron ore and fuel with which this country abounds, the trade, particularly so far as relates to the production of the metal, is capable of being much extended; and there can be little doubt of the possibility that this country may wholly supply itself with that article.

The other minerals of the county are principally those of copper and lead, of both which, considerable quantities are raised at Ecton, near Warslow, upon the estate of his Grace the Duke of Devonshire. Also a copper-mine is worked at Mixon, within a few miles of Leek, and a lead-mine near Stanton-moor. And there are several smelting and brass works in this part of

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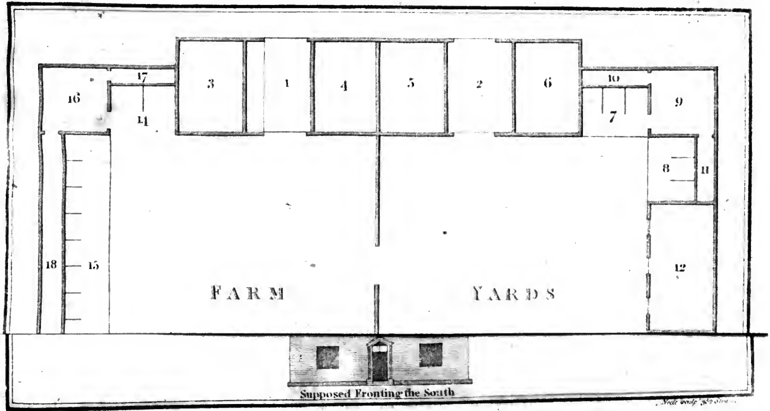

W. Pitt Inventor & delin. 1795

Neele sculp. 352 Strand

of the county, particularly at Whiston, Oak-moor, and in the neighbourhood of Cheadle; and at Shirley-wich, near Ingestree, is a considerable salt-work.

SECT. VI.—WATER.

Rivers of Staffordshire.

THE Severn, though it passes through one of the parishes of this county, viz. Over Areley, can hardly be called a Staffordshire river; yet it receives the tribute of some considerable brooks arising in the county; the principal river therefore of the country is the Trent, which, rising in the Moorlands near Biddulph, takes a winding course, first southerly, then easterly, and lastly north-easterly, and after washing the county for a course of upwards of fifty miles, leaves it at Burton, where it becomes navigable. In its course it receives the following rivers, mostly arising also in the Moorlands and the before-named hills, viz. the Dove, the Manyfold, the Hamps, or Hanse; the two last of which run under ground a considerable way near Ilam and Leyhouse; also the Churnet, the Blythe, the Teyn, and the Sow, after it has received the Penk; also, below Wichnor, the Tame, which arises in the south of the county, and comes through Tamworth to this place, where it is a considerable river. These rivers all fall into the Trent, which conveys them to the sea. The Stour and Smestall run through the south of the county into the Severn.

It might be a curious, and perhaps useful subject, not unworthy the patronage of the Board, to accertain by experiment, the quantity of water falling in particular districts; and the proportion of such quantity absorbed by the earth and its products, by the atmosphere, and carried off by rivulets respectively. The quantity falling being determined by a weather-gage, the quantity running off seems not difficult to determine; for in most countries particular outlets may be fixed upon where the superfluous water of a certain district passes off. The extent of such district being ascertained, and a trusty person fixed upon near such outlet, to take, at stated times, the depth and velocity of the stream, from thence the quantity of passing water may be estimated. I think a steady excise-officer might be instructed to register such account; and that a small addition of salary might recompense him for his trouble. I know a spot in Staffordshire where the flood-water of upwards of 100 square miles passes at a particular bridge, and can go no other way; and doubtless similar situations may be found in various places. The county, upon the whole, is well watered, and much of its water appropriated and usefully employed; yet large quantities of it are carried off in waste by floods.

Besides the rivers and brooks above named, this county contains one considerable lake, called Aqualate-Meer, on the borders of Shropshire near Newport, said to be 1818 yards long, and 672 broad, besides several artificial pieces of water, both for mills, and ornament to gentlemen's seats, particularly a pool at Chillington belonging to Thomas Giffard, Esq. containing upwards of 60 acres.

CHAP.

CHAP. II.

STATE OF PROPERTY.

THIS chapter will be short, as it is upon subjects with which the Writer is only acquainted in a general way, and upon which he made no inquiries in his excursion through the county; as not conceiving it included in the queries then proposed by the Board.

SECT. I.—ESTATES, AND THEIR MANAGEMENT.

THE value of estates in this county vary greatly, from that of the great noblemen, or opulent commoner, of 10,000*l.* per annum, to the humble freeholder of forty shillings a year. I believe I could name six noblemen, and two commoners within the county, whose estates exceed 8000*l.* per annum; a good many more whose annual income is from that sum, down to 1000*l.* and other estates of every kind of value from that sum downwards. Respecting the management of estates; those of gentlemen of large fortunes are generally managed by stewards; and here let me introduce a remark of my neighbour, Mr. Fowler of Erdington, as it will tend somewhat to lengthen what I expected to have been a short chapter; he says "there is another obstacle to the improvement of land, which is the employment of attorneys at law, by some gentlemen of large landed property, as their agents, who, although eminent in their professions, know little or nothing about the management of land, and consequently are unfit to give advice to tenants, unfit to be woodmen, and totally unfit to have the direction and management of landed property respecting its cultivation." I have farther to observe, that we have in this county some gentlemen of fortune, who farm upon a considerable scale; and some others who have a turn for business; these are consequently their own stewards; but there is not perhaps a more useful or respectable set of men in the county than the proprietors of 200 or 300 acres of land, who farm it themselves; and several such I am acquainted with, who are men of business and economy, and whose farms are cultivated in a first-rate style: it is from this class, and from the first-rate farmers, that all improvements in stock, and in the introduction of new plants, and new modes of cultivation, are to be expected, and in which, when established, they will be imitated by others: this may be sufficiently proved by the improved general cultivation of turnips and artificial grasses, which were introduced solely by the above class of cultivators, and in which they are now very generally copied.

SECT. II.—TENURES.

I BELIEVE a large proportion of the county to be freehold property, but not without a considerable quantity of copyholds; considerable portions of landed property are also held on a leasehold tenure, under the bishop, colleges, deaneries, prebends, and other church dignitaries; but seldom by the occupier, being commonly farmed out again: but with the subject of tenures, I profess myself to be not accurately acquainted.

I observe in the Lancashire reprinted Survey, the yeomanry are noticed in this Chapter, as a diminishing class of men; and I have often observed, they are remarked by writers as becoming extinct. If we have lost, or are losing them in Staffordshire, I think it can be only in name. We have gentlemen of larger and smaller fortunes, occupiers of their own estates; and respectable farmers, who hire their occupations; farmers upon a smaller scale, many of them laborious and industrious; people in trade of every class, from the opulent merchant and manufacturer, to the working tradesman and day-labourer. In short, there seems no void in the body politic, but a regular gradation from the highest to the lowest class.

CHAP. III.

BUILDINGS.

SECT. I.—HOUSES OF PROPRIETORS.

THE county of Stafford contains a good many seats of nobility and gentry, and some of them magnificent and elegant buildings; but the discussion of this subject, so far as it relates to the residence of people of large fortunes, is rather the business of the architect and the landscape gardener, than of the agriculturist; not but that by a due degree of taste and attention, the beauties of landscape may be, in some degree, easily united with the conveniences of farming, particularly in a grazing system; and we have some few instances where this has been done with good effect, but can only be attended to by those who reside on their own property.

The pasture-grounds about Freeford, the seat of Richard Dyott, Esq. are laid out with taste and elegance, adorned with groves, shady trees and clumps, and the valley ornamented with pieces of water, forming a great variety of landscape views, rural, beautiful, and picturesque, and at once uniting the utility and profits of farming with the pleasurable beauties of ornamental landscape; the premises too are applied to the raising of beef and mutton, being stocked with those most valuable of all animals, horned cattle and sheep, and both of kinds highly improved. Mr. Dyott informed me, that within a few years, the whole of this particular demesne was nothing but sheep-walk, encumbered with gorse and rubbish, and in many particular and considerable tracts so boggy, from springs, that it could not be rode over, and scarcely walked upon. It is now rich pasture land, perfectly sound. In the drainage, Mr. Elkington has been employed, of whom Mr. Dyott has a very high opinion, as effecting his object with much less labour and materials, and at the same time more effectually, than by former methods.

The following are some of the principal modernized seats of this county, that I am acquainted with;

1.	Fisherwick,	the Marquis of Donegal's.
2.	Trentham,	the Marquis of Stafford's.
3.	Himley,	Lord Dudley's.
4.	Enville,	the Earl of Stamford's.
5.	Patshull,	Sir Robert Pigott's.
6.	Sandwell,	the Earl of Dartmouth's.
7.	Teddesley,	Sir Edward Littleton's.
8.	Wrottesley,	Sir John Wrottesley.
9.	Chillington,	Mr. Giffard's.
10.	Somerford,	Mr. Monkton's.
11.	Hilton,	Mr. Vernon's.
12.	Etruria,	Mr. Wedgwood's.
13.	Aqualate,	Mr. Baldwin's.
14.	Swinnerton,	Mr. Fitzherbert's.
15.	Beaudesert,	Earl of Uxbridge's.
16.	Ingestree,	Earl Talbot's.
17.	Shuckborough,	Lord Anson's.
18.	Tixall,	Mr. Clifford's.
19.	Sandon,	Lord Harrowby's.

SECT. II.—FARM-HOUSES, OFFICES, AND REPAIRS,

RESPECTING farm-houses and offices, little can be said in general, except that those of ancient date appear often built merely by chance, without design or contrivance, whilst those of modern construction are sometimes well contrived, comfortable, and convenient. Most of the modern ones are built with brick, and covered with tile or slate. The barns, cow-houses, stables, and offices, are laid out so as to shelter a compact-yard, and some instances occur of good convenient feeding-stalls; but most of the old ones are very defective in these particulars, and the occupier is obliged to make shift as well as he can.

In the construction of farm-offices, economy ought doubtless to be kept in view, and the money so laid out as to pay an interest to the proprietor; which will always be the case in real conveniences, for which the occupier had better pay interest than go without them.

In a regular farm, after a decent and comfortable house, the next buildings requisite are barns sufficiently roomy, with straw sheds, near enough for the thrasher to deliver the straw to the cattle, with a well-fenced rick-yard, secured from trespass, near the barns. Stables for horses, cow-stalls, and calf-houses; and a feeding-shed also on a proper scale, is a good appendage to every farm. A Dutch or hay-barn, on an economical and durable construction, would save the occupier so much trouble in thatching, that he could afford to pay a consideration for it. They afford likewise security from rain in the hay-harvest; and no loss is suffered in what farmers call the tops and bottoms. This should be in the most convenient situation for the cow-houses, where the hay is consumed. Hog-sties and troughs

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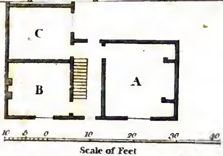
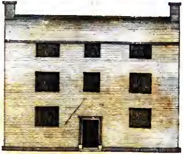
N.º adapted for a Farm of from 100 to 200 Acres. This design may be contracted by lowering the Front and putting the Attic windows in the gable ends. and in some cases one threshing floor may be sufficient also the back buildings of the House may halt at 2 stories high according to which, & other circumstances, the expence may vary from 500 to 1000 £.





Suppoſed Fronting the Weſt.

References

- A *Kitchen*
- B *Parlour*
- C *Dairy*
- D *Brewhouse*
- 1 2 *Threshing floors*
- 3.4.5.6 *Bays for Corn*
- 7 *Cowhouse for 12 Cows*
- 8 *Calfhouse taken out of the lower part of the Corn Bay.*
- 9 *Foddering Binn*
- 10 *Stable for Horses*
- 11 *Cart houses, Granary over*
- 12.13 *Hogsties, hen house over*

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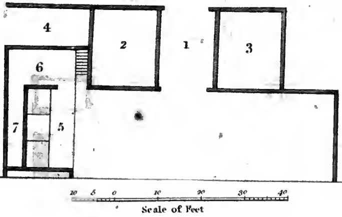

Supposed Fronting the West.

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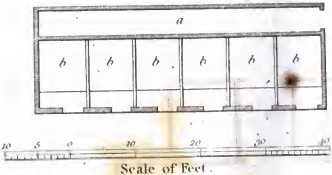
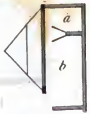
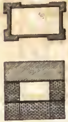
Cow Shed on an Economical Plan.







Foddering Crib for Cattle built with Brick &c.

As in the Construction of a Shed for feeding Cattle it seems necessary to have a Foddering Binn before the Heads of such Cattle, and if the whole be Roofed over it makes a wide Span and requires a good deal of Timber and materials for Roofing and covering in the same the following Construction has been made by which materials are saved and I think without inconvenience.

Instead of Roofing over the whole, the Foddering Binn and so much of the Shed only as is necessary for covering the Cattle is Roofed over, the space to walk behind the Cattle being left uncovered as may be more particularly seen in the Section

a a The Foddering Binn
b b b &c. Stalls or standings for Cattle.

The above method of constructing Foddering Cribs for Cattle with Brick & covered with Tile, is adopted in the Farm Yard & elsewhere upon the Estate of Sir E^d. Littleton Bar^t. an opening being left upon each of the four sides, one Beast may always feed at each opening & more than one at the wider openings, if they be not vicious.

As the Fodder is always kept dry & the Construction is cheap simple & durable, it is recommended as worthy of imitation.

W. Pitt inv. & delin.

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troughs of durable materials, and in a convenient situation, are also necessary. These particular conveniences are well understood, and in some places have been properly attended to, but in many others are very defective.

Respecting foddering cribs of brick, Sir Edward Littleton observes of their utility, that they shelter cattle from the winds, and their fodder from the rain; prevent fowls from fouling the fodder; the large and small beast can feed at the same time, without beating each other: they should not be covered with hipped roofs, or the wet will run down four sides instead of two; and two troughs should discharge the rain from off the cattle; the apertures should be made so high as that the small beasts can but just reach to eat out of them, otherwise, as the dung will constantly be raising round them, the cattle will walk into them before winter is over. An opening may be made at either end for the pigs to lie under it, and when the dung gets deep, a trench may be cut through it, to drain off the moisture: the apertures for oxen should be wider.

As in the present system of farming, the stocking of a farm of from two hundred to four hundred acres, will require a capital of from 1000*l.* to 2000*l.* it may be supposed that a person advancing such capital will expect, and is entitled to the comforts of life, as well as its necessaries; and that he ought to be furnished with neat and convenient apartments for his hours of relaxation, as well as necessary offices for the actual business of the farm: this observation will more strongly apply in the case of a respectable farm occupied by the owner.

The annexed Designs are for farm-houses upon different scales, adapted either for the proprietor of a farm, or a respectable tenant; with some upon a smaller scale for less occupations, as well as cottages for labourers;

in all of them, convenience and economy have been particularly attended to.

It is very plain that, with respect to the particular situation and aspect of farm-houses and their appendages, nothing decisive can be fixed in a general way; much will depend upon the situation and aspect of the site of ground on which such buildings are erected, and upon the disposition and situation of the avenues leading thereto, as well as upon many other local circumstances of relative situation; but it may be observed, in general, that the coldest aspects in Staffordshire are to the north and east, and therefore a fold-yard should be sheltered on these sides; that the hottest are to the south and west, and therefore the dairy and cellar, unless under ground, should not be exposed to those points. These are general principles, which must sometimes be deviated from, as before stated.

The materials now very generally used in modern farm-buildings, are bricks for the walls, and the covering tile or slate. This last material is not raised in or near the county, but very conveniently brought in from Wales, Westmoreland, and elsewhere, by means of the navigable canals. It is much used and esteemed, as being neat and durable, and is not, I believe, dearer than tile, when the savings occasioned thereby are accounted for. These savings are as follows: the gable walls, and chimney-shafts, are shortened; as slate will bear to lie considerably nearer the horizontal than tile, the rafters are also shortened; so that there is a saving of both bricks, mortar, timber, and workmanship; and slate is not at all affected by frost, or change of weather, which destroys tiles frequently, although we have tiles produced in the county of a kind of vitrifiable clay, that are weather-proof, particularly in the neighbourhood of Newcastle, and in some other places.

Thatch of wheat-straw was formerly much used as a covering for cottages, tenements, farm-offices, and even many farm-houses, and is still kept up on many ancient buildings, whose roofs are generally very pointed and deemed too weak to support tiles. But this covering is now pretty generally, and very properly, rejected in new buildings of every description. It is objectionable on several accounts; being more liable to be torn off by storms than a more solid covering; it forms an harbour for vermin; it robs the land of a good portion of manure; and lastly, in dry seasons, it is dangerous on account of fire, many recent instances of conflagrations having occurred, referable solely to the combustible matter on the roofs; houses, and offices, and, in one instance, almost the whole of a considerable village (Wheaton-Aston) having been rapidly destroyed.

Respecting repairs, it is very common here, upon the entry of a new tenant, for the landlord to put the farm in tenantable repair; and afterwards, the landlord finding materials in the rough, or otherwise, the tenant is at the expense of workmanship to keep it so; and in most modern contracts the tenant is bound, in case he should quit, to leave the farm and buildings in good repair; but in the case of labourers' tenements, the tenant must generally have some assistance in this respect, or it will seldom happen that the building will be kept in repair at all.

The Designs herewith given for farm-houses, offices, and labourers' cottages, are original, and it is hoped worthy the attention of gentlemen of landed property; who, upon the establishment of a new farm, should certainly make the construction and disposition of the buildings an object of considerable attention. In designs for buildings, compactness, regularity, and neatness

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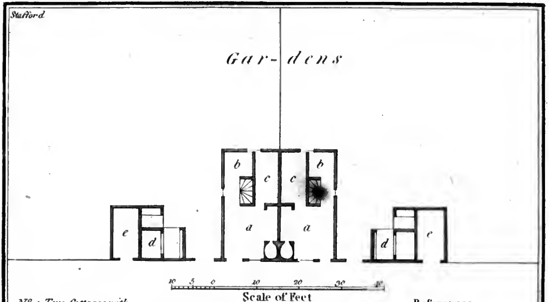
neatness should certainly be studied and attended to; for these qualities will require contrivance only, and seldom any additional expense. The expense of erecting buildings will depend upon many local circumstances; as price of materials and labour, convenience of situation respecting carriage of the heavy materials, and, above all, mode of finishing. In the finishing of farm-building, strength and durability should be more particularly attended to than elegance; yet it is the duty of every workman and designer, to unite neatness with those requisite qualities; and this last may be considered as the criterion of judgment and ability in a professional man. The Designs annexed are given as such, in which strength and durability may be united with neatness and convenience, and the whole executed with due regard to economy, and paying an interest to the proprietor.

To show that the welfare of the lower classes, is not here thought beneath the attention of men of fortune, I have to observe, that Sir Edward Littleton, Bart. has, with great humanity, turned his thoughts to the comforts and accommodation of the labourer, by erecting upon his estate warm and comfortable tenements for their use: his idea is, that for the sake of economy three dwellings should be put together, with a fourth room to serve them all for washing, brewing, baking, &c. and an oven large enough to bake for all three at once, they heating the oven in rotation, and giving notice to their neighbours; if by the side of a common the better, as the furze will supply the oven with fuel, and a few sheep or geese may be kept. Every labourer (he says) should have keep for one cow, with meadow ground for winter keep, and a garden of one-third of an acre for vegetables, fruit-trees and hemp, and where it can be done, it will be desirable to place them near a pool of water.

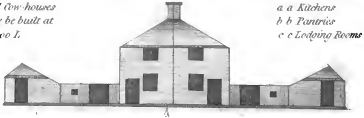
Stafford



N.º 4 Two Cottages with
Hogsties and Cow-houses
The two may be built at
from 80 to 100 l.

References

a a Kitchens	*d d Hogsties*
b b Pantries	*e e Cow-houses*
c c Lodging Rooms	*for one or two*
	Cows each



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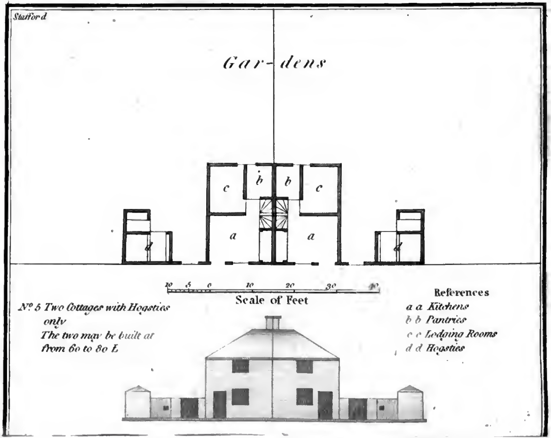

N^o^ *5 Two Cottages with Hogsties only*
The two may be built at from 60 to 80 L

References
a a Kitchens
b b Pantries
c c Lodging Rooms
d d Hogsties

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CHAP. IV.

MODE OF OCCUPATION.

SECT. I.—SIZE OF FARMS, &c.

THE farms of this county are of all sizes, from twenty acres to five hundred; yet it must be acknowledged that, within the last twenty or thirty years, the consolidation of small farms has been not uncommon: and indeed a farm of twenty or thirty acres is too small for the sole employment of a farmer, and only adapted to people retired from business and preferring to live in the country; or to country tradesmen, who, having other business, do not depend on the small farm for their main support. Farms of the smaller size are insufficient to pay a fair rent and maintain a family; and, unless the occupier has industry and resolution enough to submit to working regularly for others, generally entail poverty on himself and family*. Yet, I think, it

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* More than one cow generally has a tendency to spoil a man for a labourer, by enabling him to maintain his family with less work; and, although humane, is politically an evil.—*Mr. Boys*.

Yet I know many instances of tradesmen with families, who work regularly and daily, who by no means do it from necessity, but from habit and choice; then why not a labourer work (though not obliged to it), more particularly as, from the conditions of the case, it can only apply to "the more steady and industrious labourer?"—*William Pitt*.

Many land-owners in this county, add very considerably to the comforts of the industrious labourer, by laying or feeding their cow, or it would be a spur to steadiness, exertion, and industry, if a proper proportion of small lots of grass land, sufficient to keep one, two, or more cows, were added to tenements, and reserved for the more steady and industrious labourers, who might in service have saved money enough to stock such premises; and who, upon marrying, might leave principally to the wife the care of such stock; and such land not on any account to be broken up, except such portion of it as shall be allowed for gardens.

A good deal of clamour has sometimes been raised upon this subject of the size of farms; but, if one may judge from the arguments, or rather declamation, that has commonly been used on these occasions, it seems to have proceeded from people very ignorant of the subject. In times of dearness of provisions, it has been said, that no farm ought to exceed one hundred acres; and such high price has even been charged upon enclosures. But let it be asked, who is it in general that raises the greatest surplus of grain for market, after the family is supplied—one farmer upon three hundred acres, or three farmers on one hundred acres each, supposing the land of equal fertility? Again, it has been said, the smaller farmers are obliged to carry

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or cows, from May-day to Michaelmas, in the demesnes of their lord or master. Where this humane attention is paid, a very small portion of land is sufficient to produce hay for winter support. Another great advantage to the community, as well as ease and convenience to the owners of large demesnes, I have with pleasure observed in various parts of this county, particularly in the rich demesne of Basil Fitzherbert, Esq. at Swinnerton, and in those of Thomas Giffard, Esq. at Chillington, where great numbers of cattle are taken in for the summer to feed, at so much per head; which gives additional beauty to the lawns, and benefits the public, without injury or inconvenience to the land-owner.—*Rev. S. Shaw.*

their corn to market, whilst the larger withhold it. Admitting this as true (which by the bye is very questionable), would an early and general carrying of corn to market secure a low price to the consumer? Are there no individuals in the corn trade and manufacture, that would endeavour to benefit their circumstances by having the whole supply in the hands of themselves? The fact is, in all cases, the more persons have corn in their hands, the cheaper will it be; and every one who disposes of all he has, contributes towards a monopoly. The Writer of this is by no means of opinion that the whole country should be divided into large farms, nor indeed into farms of any particular size; but that there should be farms of all sizes, from five acres to five hundred; for I think it very hard, in the case of a couple of industrious farmer's servants, who may live many years at service, and lay by a good proportion of their wages, if they cannot, upon marrying, employ their savings in the only thing they understand; and it would be equally hard, if a person well acquainted with agriculture, who had a capital of two thousand or three thousand pounds, and which he chose to employ in farming, should be precluded from so doing. And let me again repeat, that it is only by means of the occupiers, that improved systems of management and cultivation are to be introduced.

Respecting the smaller occupations, their number is confessedly diminished; a circumstance about the propriety of which opinions vary; but which I myself regret, though I believe they never were upon a good system. A plough team should not be kept upon a farm of less than 50 acres; all smaller occupations should therefore be upon land adapted for grazing or mowing, and the main object, cows, and the cultivation of a garden;

and the occupier working the greater portion of his time for some neighbouring larger farmer. From these there should be farms of fifty acres, and to one hundred acres, and so on to the larger farmers, forming a regular gradation. I wish our gentlemen of fortune would throw their estates a little more into this system, which might prove a stimulus to our farming servants of both sexes, by holding forth to them a possibility that, by a continued course of persevering industry, they may better their situation in life, and raise themselves into a higher class.

Respecting the character of the Staffordshire farmers, I do not think them at all wanting in industry, or in a readiness to adopt established improvements. Where is the man, who has the means of doing it, who would not, when opportunity offers, improve his stock, by crossing with or buying in better animals? nor are they at all backward in adopting any improved system of cultivation, when its advantages become apparent; and, notwithstanding the abuse that has formerly been thrown upon them by ignorant writers, for a backwardness, in following their absurd projects, their time, and even their ancient methods of practice, were too valuable to be sacrificed to idle theoretical speculations. If the farmers have shewn a want of curiosity, and a backwardness of adopting rational projects, it has been owing to their want of information, to their not being in habits of reading, or acquainting themselves by that means with the practice of other countries, a circumstance owing to a defective education; but this obstacle is now removing, and the farmers will soon be a set of men of equal education with any other in equal circumstances.

SECT. II.—RENTS, &c.

RENTS are, in this county, very generally paid in money, from which I never heard or knew an instance of deviation; something like personal services are, however, kept up, for it is very common to bind the tenant to do one day's team-work in the year for his landlord, and to keep him a dog. With the high rents paid for land near large towns, agriculture has little to do: from three to five pounds per acre per ann. is often paid in good situations; the convenience of turning out a horse, and the high price of hay, account for it; as, from the advantage of forcing with town manure, large products of hay may be obtained. The rental of farms in this county varies from 10*s.* to 30*s.* per acre, according to its staple and condition; but as the larger half is in a backward state, the average price will fall below 20*s.*; however, I have no doubt but the average value is increasing, in consequence of progressive improvement (this in 1796). But there is great reason to believe, that from the year 1796 to 1804, the average rent of the county has advanced full 5*s.* per acre, and that the present average rental is not less than 25*s.* per acre, varying in whole farms from 15*s.* to 2*l.* and upwards, per acre; and the taxes, price of manure and labour, have increased in the same period of time in a greater proportion. The means employed by the farmer to meet these extraordinary outgoings are, increased exertion, industry, and the improvement of his occupation; and he is also in some degree aided by the increased price of landed produce, which upon the average of two or three years, is certainly higher than formerly.

SECT. III.—TITHES.

I HAVE no means of ascertaining what proportion of the land of this county has been exonerated from tithes, and what proportion remains titheable; for though a considerable portion of the tithes have been alienated to the land-owners, yet, I believe, much the larger proportion of land remains chargeable with tithes: a circumstance which is considered by every person (those only excepted who are interested in the profits of such tithes) as a great evil, and check to agricultural improvement.

This question of tithes having been pretty much and pretty often agitated and examined, I cannot expect to be able, in this Report, to throw any new light on the subject; I shall, however, state my ideas of the effect they have on agriculture; and if that effect shall appear prejudicial, some mode of preventing or remedying the evil may be proposed, without doing injury to any of the parties interested.

Tithes* having been formerly appropriated for a particular purpose, must be admitted as a property equally sacred with any other, especially as that appropriation is admitted by those laws which regulate the country where the tithes are produced; and although a considerable part of the property so appropriated has since been alienated from its original purpose, yet such alienation having been admitted and confirmed by those laws which protect all other property, no friend to justice and the stability of property can expect an exoneration from, or an abolition of tithes, without proposing or providing an equivalent.

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* The following remark is made by one of the constables, in his answer to the queries proposed by the Board: "Several farmers here say they will not sow their fallow-ground with wheat, but plant with potatoes or some other crop, on account of the titheman charging them from twelve to fourteen shillings per acre for tithe of wheat, and from ten to twelve shillings for barley and oats, per acre; they had used to pay four shillings for wheat, three shillings for barley, and two shillings and sixpence for oats per acre."—*Luke Pope, Constable of Smethwick.*

I have the most satisfactory proofs, from the evidence of several respectable cultivators, that the quantity of wheat sown is affected by the tithe system; they having assured me, that they decline sowing wheat, and choose to manage their land in a grazing system, because they cannot bear the idea of paying the enormous rates that have been asked them by the titheman.—*W. P.*

Having said this, I must at the same time confess, that tithes being a heavy tax upon the efforts and exertions of human industry, are in a considerable degree a prohibition of such exertion, and in that respect act as a dead weight and a check upon that spirit of improvement, which it is good policy to encourage by every means that can be devised. If an equivalent can be found, and a commutation be effected without injury to any one concerned, such regulation would doubtless be an improvement in our political system.

The following plan is proposed as the outline of an exchange of tithes for land, as land will always bear a value proportioned to that of its produce, and even the price or value of labour is measured by the same standard.

Let an act of parliament appoint, in every diocese, an equal number of the most respectable clergy and country gentlemen, commissioners and trustees, and with a power of nominating surveyors to value all the tithes belonging either to the clergy or the laity within the diocese; and let the act give an option to the landowners of purchasing their respective tithes at the valuation fixed on them by such surveyors: the money arising from such redemption might be invested in the funds, or other securities, until a proper opportunity should offer of laying it out in land; and where the land-owners should refuse to purchase such tithes, the commissioners might have the power of mortgaging them, or of taking up money on their security, to be invested in the same way with that arising from tithes actually sold: or, after a given time, the trustees might be empowered to set apart an allotment of the land of those owners who refuse to purchase, and which, if conveniently situated for the former tithe-owner, might be so applied, otherwise sold, and the money arising from such sale invested as before, until it could be laid out in the purchase of land. The execution of some such plan, would be attended with infinitely less trouble and expense than that now incurred by the annual valuation of tithes, as, should the proposed regulation be once effected, the business would be settled for ever; but under the present system, the surveyor or valuer's business is continued from year to year; and if that system should continue, will be from generation to generation. An equivalent in land must certainly be a more solid property than tithes. Land may be improved in any degree by good management and industry; tithes fluctuate or sink in value at the will of the cultivator. I think some such commutation as this may be easily effected, and that all parties would be pleased with the alteration.

SECT. IV.—POOR-RATES.

The following amount of the poor-rates expenditure of this county, was ascertained in consequence of Mr.

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Mr. Gilbert's attempts at reforming our code of Poor Laws. I have never heard the accuracy of the account called in question.

Staffordshire Poor-rates, &c. Annual Expenses, from Parliamentary Inquiries, 1783, 1784, *and* 1785.

Whole county annual expense upon a medium of those three years	£.45,404	10	10
Of this, net money paid for the poor	40,963	13	7
County rates, including gaols, houses of correction, county bridges, militia, vagrants, &c.	3261	5	4
Churchwardens' accounts for reparation of churches, &c.	1179	11	11
Total	£.45,404	10	10

I remarked a curious circumstance in some of the parishes of this county where the population is pretty well ascertained; which is, that five times the annual poor's rate expenditure in pounds, equals the population; or, that the annual poor's rate expenditure is four shillings per head upon the whole mass of inhabitants. In other places, however, the population was considerably more than the number thus produced.

Since the original drawing up of this account, which is little more than one year ago, we have experienced a most remarkable advance in the poor's rate expenditure of this parish (Tettenhall): they have advanced fifty per cent. or in the proportion of 2 to 3, both the last and present year: the cause, I suppose, the severity of the last winter, and the high price of provisions which followed. They are now about two shillings in the pound, upon a full valuation.—This remark made October, 1795.

I have no means of ascertaining the present precise amount of the poor-rates, over any considerable district, but am of opinion that they are in general now (1804) in this county, double the amount of what they were when investigated under Mr. Gilbert's act; the expense not only of maintaining the poor, but county rates and churchwardens' expenses having risen in that proportion. I believe about ninth-tenths of the money raised as poor's-rates, goes to the support of the poor, and about one-tenth to other extraneous purposes (1804). I since find in the Monthly Magazine, that the total money raised by the poor's-rates within the year ending Easter 1803, in Staffordshire, was 109,456*l.* and which is nominally stated to be 4*s.* 2½*d.* in the pound, and probably upon the real value a little under 3*s.* in the pound.

From the same authority it appears, that the total money raised the same year, within the 40 English counties by the poor's-rate, was .... £.4,951,421

Expended in law-suits	87,904
On parochial poor	3,911,644
Church rates, county rates, and militia	951,873
	£.4,951,421

SECT. V.—LEASES.

Leases are often granted: those for twenty-one years are not uncommon, and some also for a shorter term exist. In most covenants, fallowing is considered as necessary. Hemp, flax, and rape for seed are prohibited or restricted to an acre. Meadow-land is secured from the plough. Tenants are restrained from cropping and lopping timber, and from taking more than a stated number of crops. It should here be added, that farmers are generally bound to use all their dung on the farm they rent. The Rev. Mr. Leigh, in the letting of Russell-hall estate, has adopted a covenant which I believe quite novel: the tenant is bound to lay all the dung of the farm on the turf only; and fallows, and all loose or ploughed land, are manured with lime. It should be observed that the estate abounds with lime. The consequence has been, a very great and rapid improvement of the estate—the product of wheat, this scanty year, being uncommonly great. The soil is a cool moist loam, of tolerable depth, and has been formerly under indifferent management. Also from selling hay, straw, or dung. I do not recollect many other remarkable covenants. Those for securing the rents are of course. Sometimes systems of cropping are inserted, but little attended to, if the tenant be supposed going on well. The tenant is generally tied to keep the buildings in repair, the landlord finding materials. Many gentlemen who have large estates round their seats, or in their neighbourhood, do not grant leases, upon the idea of such grants rendering their tenants independent; and to the honour of many such gentlemen it may be observed, that the possession of their farms upon such tenure, is equally secure with a lease, and that, whilst the occupier behaves with propriety, he is as little liable to be disturbed in possession, and often rents upon easier terms.

SECT. VI.—EXPENSE AND PROFIT.

Respecting the expenses and profits of farming, it can hardly be expected that actual accounts should be produced; the divulging of the domestic concerns of persons in any business, seems a matter of considerable delicacy; and whether that business be farming, manufacture, or trade, will seldom be consented to, or admitted as proper, by those who are interested therein. It is, however, not difficult to form ideal estimates of expenses and returns; and if such estimates are founded on experience, and a judicious application of such experience to average disbursements and receipts, such estimates may be equally useful with actual accounts.

Previous to making such estimates I have to observe, that in this country, few fortunes are making merely by farming, and perhaps none at present upon modern rents, unless the farmer is connected with some other employments, in which, by enterprise, judgment, diligence, and industry, large sums of money may be annually turned, and a good profit often obtained: this is frequently done by engaging in the miller's and maltster's business, by dealing in the various kinds of live stock, fat and lean, or grass seeds, particularly clovers, in which very large sums are turned annually; by dealing in cheese, butter, bacon, and other necessaries of life, for which there is a great demand in populous countries. The dealers in all the above articles are certainly very useful to society, as without them it would be impossible to obtain a regular supply, at least in the present system of things; and lastly, I shall add, the surveyor's business, in which, connected with farming, money has sometimes been made. Some instances I have also known of people of property hiring a good farm, with an income sufficient to pay the rent; in such case it is no wonder if systematic management and economy should save money. The case of a person occupying his own estate has not always succeeded; in such case, turning gentleman, and neglecting the regular system of business, has soon been followed by involved circumstances; and I have known an instance of a person occupying a pretty good and clear estate of his own, till he has been obliged to sell it; and have heard of other instances, where such seller has hired it again to farm, at a fair rent, and done pretty well. If a person even occupies a farm of his own, and means to thrive, he must remember that he is a man of business, and must act as such: how much more, then, the person who hires a farm at rack-rent.

That some pretty good properties have been raised simply by farming, must certainly be admitted; several such instances having come under the Writer's observation, and similar instances must be in the recollection of every attentive person. In such cases, I believe there has always been a combination of all, or most of the following circumstances: 1st, An easy rent; 2d, A pretty good or extensive farm; 3d, Economy and industry; and 4th, Length of time. An easy rent affording the first profits, these would be increased by the after circumstances; and every calculator is acquainted with the astonishing accumulation of small sums in length of time at compound-interest.

In the present system of farming, at a modern rent, with the additional accumulated expenses of high taxes, particularly poor's and malt tax, house and window tax, additional price of labourers' and servants' wages, high amount of tradesmen's bills necessary to agriculture (such as the wheelwright, blacksmith, collar-maker, and all others); and even the luxury of the times, by which not only the food and clothing of the family, but even the boarding of servants, and workmen occasionally, is at increased expenses; under all these circumstances, the Writer of this knows from experience, that it requires not only the most diligent industry, but also the most prudential economy, to keep the balance on the right side.

It is an idea often expressed, and I believe a good deal credited, that the profits of farming are enhanced and rendered enormous by the high price of provisions, both at present, and in all similar cases. This, I believe, will not be generally found a fact: high prices are, doubtless, the result of unproductive seasons; and a scanty produce, at a high price, may make less money than a plentiful one at a moderate price. It may certainly occur, that a lucky hit of a great crop, in an unproductive season, may be advantageous to the grower: from whence appears the superior advantage of keeping land always in good heart, as in such circumstances, the growing crop is much less liable to be affected by unkindly seasons.

The following calculations are founded upon good average crops, proceeding from somewhat superior management.—The bushels are supposed Winchester, and the price an average one of the last two or three years in this neighbourhood. It is clear, that if by extraordinary efforts superior crops are raised, the returns will be greater; and equally so, that if from any cause the crops are deficient, the returns will be lessened.

1. *A Calcu-*

1. *A Calculation of Disbursements and Returns upon a Staffordshire Farm of 200 Acres of average Land, managed in a proposed System.*

Suppose 40 acres of the soundest land, in the course of, 1. turnips, 2. barley, 3. clover, 4. wheat, 10 acres each.

120 acres more arable, in eight lots, of 15 acres each; the course, 1. oats; 2. fallow; 3. wheat; 4. barley; and four years down with artificial grasses.

40 acres meadow and pasture.

The servants and workmen necessary would be, one waggoner, one boy, one stockman, two servant maids, and two labourers, besides occasional extra help in harvest, &c.

The stock, seven draught horses and mares, thirty head of horned cattle, of which one-half should be milkers, sheep, hogs, &c. according to circumstances.

Annual Expenditure.			
Rent and tithes - -	£.200	0	0
Servants' wages -	25	0	0
Labourers' ditto -	50	0	0
Extra harvest men, &c.	20	0	0
Tradesmen's bills -	30	0	0
Poor's, malt, and other taxes - -	30	0	0
Malting and hops -	8	0	0
Purchase of manure -	10	0	0
Expenses at fairs and markets -	7	10	0
Clothing for the family, grocery, and other marketings, -	50	0	0
Interest of 1000*l.* capital	50	0	0
Sundries - -	19	10	0
Expenditure	£.500	0	0

Returns.				
By sale of 500 bushels of wheat, at 7*s.* per bushel -		£.175	0	0
Memorandum, the produce of 25 acres is supposed at 25 bushels per acre - -	625			
Seed and consumption	125			
For sale -	500			
By sale of barley from 25 acres produce, at 4 quarters per acre, bushels -	800			
Seed and consumption	220			
For sale at 4*s.*	580	116	0	0
Oats from 15 acres, say	480			
Seed and consumption	240			
For sale at 3*s.*	240	36	0	0
Sale of cheese and cows		100	0	0
Profits from sheep		60	0	0
From hogs, poultry, and sundry articles -		23	0	0
Returns		£.500	0	0

The above returns are stated pretty high; and are, I believe, oftener fallen short of, than exceeded; it will be observed too, that such part of the produce of the farm as is supposed consumed at home, is not brought to account on either side.

Hence it will appear, that if any profit is to be made, more than interest of capital, it must arise either from a retrenchment of expenditure, extraordinary efforts of improved cultivation, or a combination of both. Also, that if any other system of cropping or cultivation be substituted in lieu of the above, the consequences will be the same, or better, or worse, in proportion as such system is equal, or more or less productive than that above proposed is there supposed to be.

2. *A Calculation of Disbursements and Returns upon a Farm of Sixty Acres, supposing it managed by a working Farmer, with the assistance of a boy, and a labourer occasionally; and the Dairy business by his Wife, with the assistance of one servant girl, or without any hired servants at all, supposing they have children of a proper age.*

The live stock should be, three draught horses or mares, fifteen head of cattle, of which ten should be milkers, and a score of sheep bought annually, and the lambs sold to the butcher, and ewes afterwards: suppose the farm in ten closes of six acres each, two of them meadow or pasture, and eight arable, cultivated in the course, 1. oats; 2. fallow; 3. wheat; 4. barley, and four years down with artificial grasses, or in any other course equally or more productive.

Annual Expenditure.

Rent and tithes -	£.60	0	0
Servants' and labourers' wages - -	25	0	0
Extra harvest men, &c.	5	0	0
Tradesmen's bills -	15	0	0
Poor's, malt, and other taxes - -	10	0	0
Malting and hops -	3	0	0
Purchase of manure -	5	0	0
Expenses at market, &c.	5	0	0
Clothing, grocery, &c.	15	0	0
Sundries - - -	2	0	0
Expenditure	£.160	0	0

Returns.

Sale of wheat from six acres, at 25 bushels per acre -	150			
Deduct seed and consumption -	50			
Remains at 7*s.* per bushel -	100	£.35	0	0
Barley from 6 acres	192			
Seed and consumption - -	72			
Remains at 4*s.* per bushel -	120	24	0	0
Oats from 6 acres	192			
Seed and consumption - -	96			
For sale at 3*s.* -	96	14	8	0
Sale of calves, cheese, and cows -		60	0	0
Profits from a score of sheep - -		15	0	0
From hogs, poultry, &c.		11	12	0
Returns -		£.160	0	0

In this case too, it appears that if any savings are to be made over and above the interest of capital, such savings must arise from economy and superior industry; also that the success of a farmer upon a small scale must entirely depend upon the steadiness and industry of himself and family.

The above course of cropping is proposed upon an idea, that for land to produce good crops, some rest at times under pasture is necessary, and by that means also more stock is supported; various other courses may be substituted at pleasure, but perhaps few would be much more profitable.

From the above estimates, which are founded on experience and attention, it may be inferred, that whoever

ever hires a farm under an idea of suddenly acquiring a fortune, will probably find himself disappointed; and that it is only by industry and regular management, that a result equally favourable to that of the above calculations can be expected.

From the years 1796 to 1804, I estimate the disbursements, and capital required, to be one-fourth more, or increased as four to five; also that the returns from articles sold are increased in the same proportion, the result from which will be the same as before; a well conducted grazing farm will however generally turn out more profitable, as being attended with less expenses in proportion to the amount of its produce.

CHAP. V.

IMPLEMENTS OF HUSBANDRY.

THE implements of husbandry used here for draught, are waggons and carts; for tillage, double and single ploughs, with and without wheels; drill ploughs, harrows and rollers, for other purposes; winnowing machines, straw engines, &c.

The waggons are either with six-inch wheels, or narrow wheels: a few of the former, kept by the larger farmers, in which six horses are drawn double, convey a load of from three to four tons. The narrow-wheel waggons are drawn by four or five horses, and carry from two to three tons. Six-inch wheel carts are mostly used about farm-houses for conveying dung, or for gravel or stones for repairing roads; or for hollow draining. Some few narrow-wheel carts are chiefly kept by small farmers for the road; one-horse carts also are kept by gardeners, butchers, and people who supply the markets. The wheel carriages of this county are upon a pretty good construction, perhaps not capable of being much improved: they are, I think, if any thing may be condemned, rather too heavy, and should be constructed lighter, if it could be done consistent with the giving them a sufficient degree of strength. Double or two-furrow ploughs are much used, and answer well on light soils, where four horses will plough two acres or more per day. These ploughs are made on a good construction, and require no holder. The single wheel plough is a very good tool, requiring no person to hold or touch it, except when it is turning at the end of the furrow: they require but one attendant, for which a boy of fourteen or fifteen years of age is sufficient. And here I cannot but remark the superiority of a plough that requires no holder but a person only to drive the horses, and turn it out and in at the end of the furrow, to one which requires to be held, and the horses of which are guided by reins. These ploughs have lately been much improved by the addition of an iron earth-board firmly screwed to the coulter, called here a flay, for ploughing turf, which takes off the turf, and turns it into the furrow, where the plough immediately covers it with earth: by this management, a turf at one ploughing has the appearance of a fallow, and harrows nearly as well. This ploughing is attended with scarcely any extraordinary trouble, but requires the strength, perhaps, of an extra horse. It is much used here for turf. The common swing plough without wheels is used to plough hedge sides, ill formed corners, or any difficult work: it requires both a holder and a driver. The drill ploughs used here are of Cook's invention, or an imitation of it; or another made in the North, and sold here by Mr. Joseph Cornforth, machine-maker. The last is the cheapest. They both do their work well, and cover up the seed at the same time; which covering is farther perfected by rolling. The harrows used here have nothing singular in them. The common roller is used, and sometimes the spiked roller, on strong land, with good effect. Large heavy cast-iron rollers, of from one to two ton weight, are used, and are excellent for meadows, or for rough or cloddy arable land: they require, however, a good strength of horses to draw them.

I have lately seen a common corn roller, constructed of two pieces instead of one, being cut through, as it were, and hung with gudgeons in the middle; the advantage of which is, that in turning, it is less liable to root up the corn, and may be formed of two short pieces, instead of one longer. Machines for winnowing, or dressing corn from the chaff, have been long in use here: they are now brought to great perfection, and do their work completely, and with dispatch, requiring not more than about half the time necessary in the common way. They are made upon the very best construction by Mr. Joseph Cornforth, at Bushbury, near Wolverhampton; the price from six pounds to seven guineas each. Upon the whole, the machinery and implements of this county are tolerably good, and little seems wanting in this way; and I cannot help thinking, I hope without partiality, that our implements in general, but ploughs in particular, are equal to any, and superior to most, which I have seen; and I have viewed those of many counties. Mr. Miller on this subject makes the following remark: "The ploughs made in any country where the ploughmen have been most used to them, are the best; for when I came to this place, I brought with me ploughs and ploughmen out of Leicestershire, which were good ones so long as my Leicestershire-men staid: but when they left me, they might as well have taken the ploughs along with them; for Staffordshire-men could not plough with them." This remark may serve to shew the difficulty of altering established customs, and that such alterations, even if improvements, must be gradual, and introduced by degrees; as the same workmen are not brought at once to use a new tool expertly: and unless they in some degree approve of any new practice, to make a fair experiment, the master must give his own attention, and do the business himself.

Since drawing up the above account to the present time, 1804, Norfolk ploughs have been frequently introduced into this county; particularly by gentlemen who have made farming experiments; but though they will plough our moist soils, they are not likely to be permanently established here, and are generally laid aside, as being better adapted for lighter lands, and inferior to our own ploughs for mixed or strong soils.

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CHAP. VI.

ENCLOSING, FENCES, GATES.

THE most considerable proportion of the cultivated land of this county is enclosed, very little remaining in common fields. I can only recollect the following common fields: 1. Stafford; 2. Stone*; 3. Cheddleton; and 4. Bloxwich; the whole amounting to, perhaps, little more than one thousand acres. I reckon in all cases, that common-field land is improved at least five shillings per acre per annum by enclosure, which will pay a good interest upon the expense of enclosing; also that its produce will be considerably greater; for common fields are generally both imperfectly cultivated, and exhausted by hard tillage†. Enclosures only can effect the improvement of stock. Respecting population, I have no doubt but the means of employment are increased by enclosure, by the planting and reparation of fences. To prove the superiority of enclosures, let us put the case of a proposal made to throw a well-fenced enclosed country into common fields, and I believe every mind would revolt at the idea. The size of enclosures is various, and of all dimensions, from smaller to twenty or thirty acres,

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* The common fields of Stafford and Stone are since enclosed.

† And it is not very probable, that a farmer should expend much in improving and keeping his land well cultivated, when others are to share the advantage.—*S.*

and

and should always be proportioned to the size of the farm. I believe the superiority of enclosures to common fields is universally admitted, and know not of any argument that can be brought to prove the contrary: "especially where the enclosed land is laid contiguous to each farm claiming its proportionate share."—*S.*

The following account of Elford Enclosure, by Mr. Bourne, is communicated by the Rev. S. Shaw.

The greater part of the parish of Elford was common-field, meadow, &c. till the year 1765; when an act was obtained for an enclosure. Previous to that time the land was lett at very low rents, and the tenants were mostly in low circumstances: by the enclosure the rents have been trebled, and the tenants better enabled to discharge them.

The whole parish contains about 1900 acres, 1053 of which belong to the Lady Viscountess Andover, 240 to the rectory, 578 to different freeholders, and the remainder is laid out in roads, &c.

Of the above land about 500 acres are annually in tillage, and which, we suppose, bring as much grain to market as the whole parish did in its open state: the quantity of cheese made now, in proportion to that made prior to the enclosure, is more than three to one; the proportion of beef and mutton produced on the land is still greater, as much as ten to one; for though there were sometimes many sheep kept in the common fields, they were so subject to the rot, that little or no profit arose to the farmer, or produce to the community.

Respecting population, there were, prior to the enclosure, in the parish 57 houses or tenements; at present (1791) there are 76 houses, and 360 inhabitants.

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This increase has not arisen from any manufactory, but merely from the increase of labour necessary for the improved cultivation. That enclosures sometimes injure the small farmers, if laid in large farms, must be admitted; but that they are advantageous to the community, must appear from the above statement of the produce of this place.

W. BOURNE.

Elford, October 10, 1794.

Respecting the manner of enclosing, and the materials used for, and contained in our fences, most new enclosures are firstly fenced round with post and rail, after which a mound or bank of earth is raised up to nearly the height of the lower rail, with a ditch sufficient to drain the land, where draining is wanted; withinside the bank, and a little above the level of the natural surface of the earth, are then planted the quicksets, for which purpose the white thorn is mostly approved, and generally used: care should be taken to have a sufficient depth of good soil for the quick to take root in, and it must be kept clean from weeds for the two or three first years. By this means a good fence is soon raised, which may be kept within bounds, either by trimming or plashing at pleasure. In our ancient fences many other kinds of wood are common; as the crab, the hazel, the sloe *(prunus spinosa)*, a species of the willow, generally the narrow-leaved sallow, a variety of the salix caprea; if a stake of this wood be driven, it will take root and grow luxuriantly, in dry as well as moist situations; it is called here withy; also, in moist grounds very often, the alder *(betula alnus)*, the privet, the dog-tree, the marsh alder, and many other sorts of wood, as well as briars and brambles; most of these are inferior to the white-thorn, and all kinds of smooth wood form but an imperfect fence; also the hazel is very apt to tempt trespassers to break the fences in gathering the nuts. The gates, and posts, are generally made of oak. An economical scheme has lately been talked of, and attempted, which is the planting of willows in proper situations, for making gates, rails, and hurdles, which being of luxuriant growth, will soon be ready for cutting down, or lopping, for those purposes, and will quickly shoot out again. If by this means oak can be reserved for more important purposes, it will certainly be worth while to plant willows for farming uses; any moist corner would produce them, or perhaps old pit, or they may be planted regularly in the fences on moist land: the proper sorts should be attended to; the withy of Staffordshire, mentioned above, is totally unfit for these uses, as not growing sufficiently long and straight; the best sorts are, I believe, white willow *(salix alba)*, the crack willow *(salix fragilis)*, and some foreign sorts. I think this scheme worthy of attention.

A paper has been received by the Board from Staffordshire, from an anonymous writer, referring to this particular subject of enclosing and planting fences, with extracts from which I mean to conclude this subject. This writer says, " almost all the modern enclosures that I have observed have been made with white-thorn, a fence pretty and neat, that will grow in most soils, and soon makes a fence, and is readily kept within narrow bounds; but its superfluous wood will not repay the labour of planting and cutting, nor is it productive of any profitable fruit. The motives for enclosing all lands are, obviously, utility and profit; therefore, when an enclosure is determined on, the next consideration is to divide it with materials that will be both useful and profitable. I have not the smallest doubt, but that if all the hedges in England had been originally planted in the most profitable manner, they would for many centuries past have produced, and to the end of the globe's existence, continued to produce, beverage, and materials for spirit, sufficient for the supply of all the inhabitants of the island, as well as food for fatting all the hogs, and materials for repaying the expense of occasionally new-making, and all this without being more injurious to the land than the hedges now in use.

"To obtain those advantages, plant, at the distance of ten, twenty, or any greater number of feet that may be thought advisable, a Spanish chesnut; mid-way between the chesnuts plant a crab; between the chesnuts and crab plant a common plum; in the intermediate spaces plant white-thorn; when they have been planted three or four years, and are in a thriving state, about February or March cut them off with a sharp knife about an inch above the ground; they will then throw out many shoots; keep them clean from weeds, and let them continue growing till the chesnut-shoots are large enough for stakes and binders, which may be in eight, nine, or ten years. When the hedge is made, at proper distances leave a straight handsome chesnut-shoot to grow into a tree: if you prefer timber, let it remain for that purpose; but if you prefer fruit, cut off the top; and, if you can procure grafts from Spain or Italy, graft them therewith: in like manner, leave a handsome shoot from the crab-stock, and graft it with an apple, and the plum-shoots with the different kinds of plums; leave likewise shoots of the white-thorn, and graft them with medlars: thus will you have a very productive fruit-garden, without any waste of land, and a permanent fence, that will continue to the end of time. It is of consequence, as much as may be, to have the hedge on every side belonging to the same field; in which case, when the field in is tillage, the whole fence is at once protected by the crop. The all-bountiful Creator has supplied the earth with a vast variety of wholesome and nourishing fruits, and it is the duty of man to extend the blessings of Providence. Chesnuts would be exceeding fine food for hogs or other cattle, and are without doubt nutritious for human food, and obtained with little labour; apples every one knows the use of; and if the produce of plums and medlars exceeded the consumption of the neighbourhood, they would fatten hogs for pork, or the juice might be converted into spirit, which would probably be much superior to malt spirit, and perhaps little inferior to French brandy or rum. In the present system of planting, for one tree or shrub producing useful fruit, an hundred unproductive ones are planted: instead of the lime, the fir, the larch, and the poplar, why not plant the chesnut, the walnut, the beech (and I think the oak should have preceded the three last)? these are all productive trees, and will grow in moderate soils. If no other market could be found for such produce, swine would feast luxuriously and fatten on it: roasted chesnuts are said to be a principal part of the diet of the poor peasantry of Italy."

CHAP. VII.

ARABLE LAND, CROPPING, AND CULTIVATION.

THE arable soils of this county, considered as referring to cultivation, may be divided into, first, the stiff or strong clay, marl, or loam; secondly, the loose or light gravel or sand; thirdly, the mixed or compound soil or loam, composed of various textures and matter in different places, inclining to sand, gravel, or clay; in which may also be included the thin black soils and the calcareous soils, or those on a limestone bottom.

The grain, pulse, roots, and other vegetables cultivated in field culture, upon the arable lands of this county, are chiefly the following:

1. Wheat.
2. Rye.
3. Barley.
4. Oats.
5. Beans.
6. Pease.
7. Vetches.
8. Buckwheat.
9. Hemp.
10. Flax.
11. Turnips.
12. Potatoes.
13. Cabbages.
14. Rape.

To these may be added clovers, trefoils, and two or three of the real grasses. Turnip cabbage has been tried, as well as sainfoin, lucerne, burnet, and the other artificial grasses. Carrots and other garden-plants are not introduced into field cultivation, except by gardeners for the markets.

Respect-

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Respecting a system of cropping and round of crops, no general one can be laid down that will apply in all cases: various accidents and circumstances will render deviations necessary and proper, and the industry and skill of the attentive farmer will rise superior to systematic rules; yet as every regular business, to be well managed, must be conducted by something like system, the following courses of crops are given as the general practice of this county.

The stiff or strong soils are of two sorts: the strong and harsh inclining to clay, and the more mild or friable marl or loam. These soils are generally on a marl bottom, often afterwards rock. On the strong harsh land seldom any other grain than wheat and oats are grown, and in the rotation of, 1. fallow; 2. wheat; 3. oats; when the land is laid down with clovers, trefoil, and ray-grass, for one, two, or more years. Sometimes on breaking up an older turf, the course is, 1. oats; 2. fallow; 3. wheat; 4. oats, with seeds as before. On the more mild and friable loamy soils, the course of cropping is, 1. fallow; 2. wheat; 3. beans or pease; 4. barley or oats; when the land is laid to grass as before. In laying land down to grass for more than one year, the white clover and trefoil are often sown. On this sort of soil, "beans are sown in the beginning, and oats at the latter end of March; barley seldom sooner than May;" although I think barley should always be finished sowing in April. Wheat is principally sown in October, but some little both sooner and later. A vein of incomparable marl is found near Stafford-castle, and in the neighbourhood of Eccleshall, which in some places rises to the surface of the earth, and the farmers plough into it. The Rev. Mr. Dickinson informs me, that the farmers fallow here for wheat, and get good crops without manure. They reserve the dung for the wheat-stubble, and put it on in autumn, for the benefit of the Lent tillage. This method secured afterwards a crop of beans and another of barley, which, when the dung was laid on the wheat-fallow, were often unproductive. This appears a capital improvement, and of extensive application. Marl has been formerly, and is still much used on these soils. As it abounds in the understratum it should be laid on sparingly, otherwise it gives a harshness to soils perhaps too strong before. Lime is an excellent corrector of such harshness: it has the power of ameliorating such soil, and in some measure of breaking and dissolving its particles. It is much used, and with good effect, especially after marling.

I have been informed that the following tillage for barley in these soils has been attended with success, though not practised to any great extent. After summer fallowing for wheat, and harvesting the wheat crop, those who practise it plough up in the November following the wheat-stubbles in a proper form for sowing, lay them dry by proper furrows or gutters, and sow barley the April following, without farther ploughing, as the amelioration of winter frosts disposes the land to work kindly under the harrows without more tillage. To give this a fair chance of succeeding, the summer fallowing should be managed in a complete style. This strong soil will form good pastures, as can be proved by here and there a piece of old turf, which is an excellent pasture; but the occupiers say it requires many years to turf. My neighbour, Mr. Miller, complains of this land being too much ploughed, observing, that "it is worked with the plough till it is tempered enough to make bricks, and then the occupiers complain it will not graze." Perhaps a larger proportion of turf, by enabling the occupier to maintain more stock, and consequently produce more manure, might be a means of producing an equal or superior quantity of grain from a less breadth of acres*.

Mr. Miller thinks the quantity of turf land on these strong soils should be increased, by laying a few more pieces to grass, in proportion to the size of the farm, one piece in a year, clean and in good heart, with perennial red and white clover, trefoil, burnet, and grasses, and afterwards mucking on the turf†.

Secondly, the light sandy or gravelly soils adapted to turnips. On this sort of land the Norfolk system of, 1. turnips; 2. barley; 3. clover; 4. wheat, has been long well known and practised. The principal time of sowing turnips is from New to Old Midsummer, but some are sown both earlier and later; the land in preparation for turnips has generally four ploughings, and sufficient harrowings between. The first ploughing should be before Christmas; the second in March, and well harrowed down; the third in May, and the fourth at sowing. The manure used here for turnips, is dung or lime, or both, or a compost of dung and soil. Near large towns, the dung of such towns is often used; and near Birmingham in particular, I am well informed, the parings and shavings of bone, and hoof dust, is applied with great success. Turnips are in general hoed, and sometimes a second time, and weeded by hand; but it has not been always easy to procure hands for the whole of this business at a reasonable price. It may perhaps be worthy of remark, that the turnips of the last year (1793), in this country, were produced of the largest size ever known; commonly of the weight of from twenty-five to thirty pounds each; occasioned undoubtedly by an uncommonly luxuriant Michaelmas spring, and a mild open autumn and winter. The turnips are parted with hurdles, and generally ate on the ground by sheep and calves; and it is common to draw a quantity of the largest for stall-feeding. Some farmers having observed, that this system of the same crop every four years is hard tillage, and tires the ground, have given their fields two years rest under the seeds; which makes the course, 1. turnips; 2. barley; 3. clover; 4. pasture; and 5. wheat. The wheat often succeeds well upon a two-year lay, though I think not so kindly as immediately upon the clover. Some farmers, however, think they can observe no deficiency of crop on that account: some have totally omitted the growth of wheat on light land*.

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* There can be no doubt of producing a larger quantity of grain from two-thirds the quantity of land, well improved.

† A compost of muck lime and soil is the best dressing to produce a fine pasturage on any land; for light soil, a little marl mixed would improve the compost.—*R.*

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* Mr. Dyott, of Freeford, grows annually seventy acres of turnips, which are well hoed and cleaned, and followed by barley with seeds: the produce of barley is always large, and sometimes great, to eight quarters per acre and upwards; after barley the land remains at grass, one, two, or more years, according to circumstances Mr. Dyott's growth of wheat not exceeding thirty acres average, the greater part of the turf-land is therefore, on breaking up, fallowed for turnips, and the growth of wheat totally omitted.

As wheat is the true staple grain, and of the greatest importance for the subsistence of the increasing part of the species, I think where turnips are early eaten off, the land should be sown with wheat, which would succeed on sound land at any time to the middle of February; clover may be sown amongst such wheat in the spring; and succeeds equally well with that sown with barley: and there can be no better possible preparation for wheat on light land, than the process used for raising a turnip crop, and such crop early eaten on the land by sheep, and young cattle.

Their

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Their course is, 1. turnips; 2. barley and seeds, pastured for two or more years; and then sometimes oats, on breaking up the turf; or, 1. turnips; 2. pease; 3. barley and seeds as before. As in these courses the great staple, wheat, is neglected, I cannot bestow on them any commendation, but should prefer, 1. turnips; 2. barley with seeds; 3, and 4. pasture two or more years; 5. pease; 6. wheat*. This is sometimes practised, but is most applicable to land not too light or sandy, but possessing some staple of loam. The following course also is not uncommon, nor a bad one, upon land that is continued some years in pasture: 1. oats; 2. wheat; 3. turnips; 4. barley with seeds, pastured for some years. It must be remarked, that whenever light land is seeded down with an intention of remaining some years in pasture, four pounds of white clover, and four pounds of trefoil per acre, besides grass seeds, should be sown with the red clover. "Add four pound of perennial clover, with some rib grass and good hay seeds."—*S.*

Should ever the increase of fruit, by furnishing a larger proportion of the beverage of mankind, lessen the demand for barley, of which a wish is expresssed under the article Orchards (see Orchards); then a very proper course of cropping light lands would be, wheat after the early eaten turnips, and clover upon the wheat in the spring, which would be, 1. turnips; 2. wheat; 3. clover; 4. wheat, on part of the land; and, 1. turnips; 2. barley; 3. clover; 4. wheat, on the other part; and these courses might be varied alternately; and such a circumstance would greatly increase the growth of wheat, upon the best possible preparation, as observed above; and might be brought about by a more general cultivation of orchards, and the right sorts of fruit trees.

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* Wheat should be sown by all means, if marl, or good stiff soil can be laid on in any quantity, to refresh and stiffen the soil.—*S.*

Thirdly, mixed soils, compounded of, or inclining to sand, gravel, or clay; the bottom various, sand, gravel, clay, marl, or rock; including the thin black soils, and the calcareous soils, or those on limestone.

The mixed soils on a gravel or clay bottom are very subject to be springy. The water being pent in by beds of clay, is very apt to break out upon the surface through the gravelly stratums, and in wet seasons to starve and destroy whatever crop may be upon the ground; and this defect is extremely common upon most soils composed of a mixture of sand or gravel, or clay; and the intercepting of such springs, and conveying away their water by hollow-drains, is a very extensive and important part of agricultural improvement, equal in these respects to the draining of fenny land, at least in this county: and to the credit of the present occupiers be it recorded, that great exertions have been of late years made, and are still making in this species of improvement*.

Fallowing

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* Whoever farms strong clay land, will (notwithstanding he adheres to the maxim of sowing ameliorating crops) find it necessary to make fallows; when land is going foul and stubborn, it is the only mode to recover it, and is certain to make a grateful return for the indulgence.

In the management of the fallows, they are generally ploughed up betwixt Michaelmas and Candlemas, from a bean or oat stubble, cross-ploughed and harrowed down in summer, and then manured with

Fallowing for wheat is practised on cold, wet, or strong lands by the best farmers, and is doubtless absolutely necessary on all lands improper for turnips (which all lands are, that are not sufficiently dry to eat them on the ground by stock; for in such lands the poaching and treading, in carrying off the turnips, will do much more injury to the land than the turnips are worth); and he who shall attempt to manage such land without fallowing, will have occasion to repent his mistake. The Writer of this acknowledges himself to have been once a sufferer by too implicit a confidence in the opposite theory. Fallowing is necessary, because the roots of the perennial grasses, such as couch-grass, here vulgarly called squitch, cannot be sufficiently weakened or extirpated without repeated summer ploughings; and without such extirpation, it is in vain to sow wheat or other grain, because such grain will be much injured, and in some seasons, particularly in a wet one, be choked by the increase of such grasses. The grass roots, here called squitch, are not of any one individual particular grass, but of several of the perennial grasses. What is called the black squitch, so troublesome in dry arable land, is an *agrostis* or bent grass, usually referred to the *agrostis capillaris*: but Mr. Curtis assured me in London, this spring, that this grass is not the *capillaris*, and that in his next ar-

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with lime or muck. In the use of the latter there are different opinions; some lay it in a heap to rot down till it will cut with a spade, before use; others take it fresh from the fold-yard, spread it immediately, and plough it in: having tried both methods, I give the preference to the latter, from the conviction of its meliorating and breaking the soil more than the other; it dresses more land, and when ploughed after the crop, rises in a better state.—*R.*

rangement of the grasses he shall call this squitch grass the *agrostis repens*. The creeping red-stalked bent grass *(agrostis stolonifera)* is the worst squitch grass on strong wet lands. The dog's grass *(triticum repens)* is the squitch grass of gardens. The tall oat grass, or bulbous-rooted squitch grass, is very troublesome, and if suffered alive in the ground in wet seasons, will increase prodigiously, and choke any crop. The creeping soft grass *(holcus mollis)*, and several others of the perennial grasses, will interfere with the growth of corn; and as they have all the habit, in some degree, of establishing themselves in the ground when it lays in turf, summer fallowing becomes necessary for their extirpation, previous to sowing wheat, as this extirpation can be only very partially effected by hoeing, or in any other way than by repeated deep summer ploughings; and as the mixed soils now in question, which are too moist for turnips, have a particular propensity to the production of these grasses, summer-fallowing becomes absolutely necessary, and every attempt to crop without it, for any length of time, on such land, has terminated to the injury of the land, and the loss of the occupier*.

The usual culture and course of crops on the mixt soils of this neighbourhood are, first, fallow with four ploughings, and manured with dung or lime, or both, or marl and dung, and sown with wheat. Secondly, the wheat stubble pin-fallowed, that is, ploughed in autumn, and laid dry, cross-ploughed in March, and harrowed down, and ploughed up and sown with barley in April, with clover and other seeds, and then laid two or more years in grass; after which it is again ploughed up, and oats are sometimes sown on the turf, which is afterwards fallowed again. The following mode seems a rational way of avoiding a total fallow, and is sometimes practised, viz. First, oats on one ploughing of the turf. Secondly, the oat stubble dunged, ploughed at Michaelmas, and sown with winter vetches, to be eaten off the ground time enough for a fallow for wheat. Thirdly, wheat. Fourthly, barley with seeds; and then grass for two or more years. Some of the courses of cropping before named for strong and light soils, are also sometimes applied to mixed soils.

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* These remarks on fallowing are evidently the result of observation and experience.—*Mr. Boys.*

Vetches are often sown in this county, both in autumn and spring; the former certainly by much the most commendable. I have this season met an instance, where a pretty good crop has been carted to the stable, and the whole piece cleared early enough for sowing turnips in June. This will seldom happen here, and is attributed in this instance to the mild winter and early spring. Vetches would, I think, be more sown, but the seed is generally dear, and the keep often not worth the seed, without running them on the ground so long as to interfere with the working of the fallow.

Rye is sometimes sown on a wheat stubble for early spring feed for sheep, eaten off early enough to work the ground for turnips. This on sound forward land may give feed enough to pay for the seed, as coming in at a time when keep is very valuable. Rye is little grown for a crop in this county, except on headlands or hedge sides. Rye used some years back to be much sown, mixed with wheat, on light land, but has been generally omitted since the introduction of the system of wheat on clover lays.

Buck-wheat (called here French wheat) has been grown both for ploughing under as a manure, and for a crop, but is in no very high repute, and no respectable experienced farmers would think of growing it, unless upon new-enclosed or unimproved land. In the system of ploughing it in as a preparation for wheat, it has generally been supposed to leave the land too light and porous; and for a crop, although the seed is a good food for hogs, pigeons, or poultry, it is not in general esteemed equal to a crop of the usual grain or pulse. One of our native plants, nearly allied to this, stands recommended by Dr. Withering, for cultivation; at which I suppose the practical farmer will laugh, though perhaps without a cause: this is the black bindweed, called here bearbind *(polygonum convolvulus)*, which the Doctor prefers to buck-wheat *(polygonum fagopyrum)*. His words are these, after describing the bindweed*: " The seeds are quite as good for use as those of the preceding species (referring to buck-wheat), are produced in greater quantity, and the plant bears cold better." The seed certainly contains a very fine white flour, and the plant is extremely prolific, but the grain is smaller than that of buck-wheat. The farmers here consider it as a troublesome weed, twining round the stem of beans, wheat, or other grain, and fretting the plant: and the seeds, being of a triangular form, will not readily separate, in dressing, from the grain with which it grows; it may probably be equally worthy of cultivation with the buck-wheat, as a food for hogs and poultry.

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* The husk is very brittle, as well as that of the buck-wheat; crumbles in the grinding, and sullies the whiteness of the flour.—*S.*

Hemp and flax are grown in this county, but upon a small scale. Hemp is generally grown in small yards, appropriated to that purpose, near houses, or in the gardens of cottages, though sometimes an acre or two is grown by a farmer after turnips; and I have known a few instances of large crops upon a deep black peat, well drained. Flax is generally grown upon a turf on one ploughing. Most leases have restrictions to prevent the cultivation of these plants on a large scale, and the tenants are often limited to an acre; although other farmers with open leases make no use of the privilege, supposing these plants will pay no better than the usual grain, which I believe they will not, when grain bears a pretty good price.

Potatoes have been a good deal cultivated in various ways, and applied to the fatting of cattle and hogs*: but the better sorts will not pay for those purposes, unless in very plentiful years, when they are cheap at market. The refuse potatoes are very generally applied to fatting hogs, which they will bring on fast, when boiled and mixed with a little ground barley, and the inferior barley called tail-end; and even damaged barley will do for this purpose. The markets are principally supplied with potatoes by cottagers who have large gardens, or who rent land for the purpose of growing them: some also are grown by the smaller farmers. At Smethwick, near Birmingham, I observed upon a mixed soil, some fields of potatoes in rows of a width to be plough-hoed; they were managed in a good style, the land well worked, and clean. They have been grown here in various ways; cultivated both with the plough and spade; and the culture well understood, as well as their application to fatting cattle; the quantity applied to which is regulated by the price of the market.

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* And poultry.—*S.*

The cultivation of cabbages in the field has been introduced into this county for some years, and practised in most parts of it upon a small scale; many of my neighbours growing them regularly, as I have several times myself. This spring I observed, May 20th, two fields of cabbages already planted, between Croxall and Burton upon Trent. Also, May 27th, Mr. Harvey of Dunstall, who has been long a planter of cabbages, had some breadth-planted with autumnal plants, and intended finishing the field with spring plants. This is the true system, as the former will be large enough for early use, and the latter will stand the winter for use in spring. He plants the drumhead, and procures the seed from Scotland: I observed also, cabbages planted near Okeover, and the ground well prepared: their culture and use are understood in most parts of the county. They are principally given either to sheep, in which case they are carted to a turf; or to milking cows, whose milk they much increase, without tainting the butter*. Sometimes also they are

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* But the decayed leaves should be picked off, and a small quantity of nitre put into the milk, if necessary.—*S.*

The cultivation of cabbages in the field still continues, and seems rather on the increase: when old, they are found to taint the milk and its produce, which the following receipt will prevent, either from cabbages or turnips:

Take a quarter of a pound of saltpetre and pour upon it a gallon of boiling water, which keep for use: to every milk-pan of milk, when set up, put in one quarter of a pint, stirring the milk, to be skimmed every meal.—*R.*

given to feeding cattle, as they can be come at in frost and snow, when turnips are buried, or locked in the ground. My neighbours, Mr. Corser, Bushbury, and Mr. Miller, Dunstall, have this season, 1794, each of them a good portion of a turnip field prepared for cabbages; Mr. Miller's being now, June 25th, in part planted; the others waiting for rain. They choose to plant them on three feet ridges, manured under the rows, with soil left between the rows for one plough-hoeing: the hoeing is afterwards finished by hand: some people plant them without ridging, spread the manure promiscuously, and do all the hoeing by hand. Their use for milking-cows is rendered of less consequence by a discovery, in consequence of which, turnips may be given to such cows without tainting the milk, or its produce. A small quantity of clear water, in which nitre has been dissolved, added to the milk fresh from the cows, will take away every ill flavour from the butter, though such cow may have been fed ever so plentifully with turnips. I am since informed by my neighbour, Mr. Miller of Dunstall, that they have been equally successful in curing the taint from turnips, by putting a lump of nitre in the vessel that holds the cream; and the cultivation of turnips being more simple, attended with less labour, and probably more kindly for the ground, they will on these accounts have the preference. Some farmers think cabbages are best grown on the same spot or flat of ground every year, which should be allotted and enclosed for that purpose: others grow them in the turnip field; and they are followed by barley, as it is generally convenient to reserve them for use late in the spring: and as they are often grown on the strongest soil of the field, the land drying and becoming cloddy, gives more trouble in making it fine for the barley crop, and may occasion the idea of their leaving the land less kindly than turnips, although this may be owing to other circumstances.

Turnip-cabbage has been cultivated by several persons; but the uncouth form of the roots, and the difficulty of clearing them from the ground, has occasioned them to be neglected; although they are extremely hardy, and might be of some use in the interval of time between turnips and grass.

Rape *(brassica napus)*. This plant I have never known cultivated in this county for its seed, and many leases contain restrictions to prevent it; but it is sometimes sown on an early stubble for spring feed for sheep, upon land intended to be sown with turnips the ensuing summer: the smooth charlock is this plant in its wild state.

To the courses of cropping before stated, I shall just add that of the Moorlands, which is the worst part of their management, destructive to the land, and certainly ignorant in the extreme. This course is generally, first, oats upon one ploughing of the turf; secondly, oats upon one ploughing of the stubble; and thirdly, oats after a winter fallow, with clover and grass seeds; but the clover and seed sometimes* omitted, and Nature trusted to alone to form the turf. They have an idea that the land will not produce wheat, or not ripen it in time, and but seldom attempt it†; but when they do, it is after fallow. They say it will grow a year from the sowing. I have no doubt but its

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* Frequently omitted.—*S.*

† The farmers hereabout are (as you may judge from Mr. Pitt's Review) scandalously backward, ignorant, selfish, and bigotted.—*S.*

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time of ripening would be much facilitated by introducing quickset fences to shelter the country in winter, which is in general very high ground, much exposed to winter blasts*, and sheltered only by low stone walls. With quickset fencing and early sowing, I have no doubt but any quantity of wheat required might be produced; but the country not being populous, and oat-bread in general use, the demand for wheat is not very great: its cultivation, however, as I understand, is increasing†.

The most material alteration that has taken place in the cultivation of this county since 1796, has been in the pretty general introduction of the Swedish turnip; few farms of any consequence are now without a few acres of this plant. The turnip-cabbage is now entirely rejected, and the Swedish turnip (a superior plant), or the same plant improved, adopted in its stead. This plant is without stalk, has a large fleshy, well formed root, and green succulent top, and much more hardy and nutritious than the common turnip, and has the quality of retaining its juices much farther on in the spring; it has been cultivated both by transplanting, broad-cast, and drill, and each way with success; if transplanted, the seed should be sown on a seed-bed in April, and transplanted in May and June; if broad-cast or drilled, should be sown the end of May, or beginning of June. This plant has been drilled on narrow ridges with success, being afterwards kept clean and thinned properly; or sown broad-cast, as the common turnip; but being a slow grower, should be laid in about three weeks sooner. A good crop will be equal in bulk to the common turnip, and will be fit for use the middle of May, or till there is plenty of grass. It is said above, this plant has no stalk; that is, it should have none till it shoots away to blow for seed the second spring, still retaining its moisture and nutritious qualities.

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* Wheat is seldom or never hurt by frosts, except in being thrown out to the surface; but its great enemy, wet, should be guarded against, by rounding the butts, and giving sufficient slope in ploughing, and afterwards opening the furrow with a spade.—*S.*

† Particularly in the lordships of Draycot in the Moors, Dilhorne, and Caverswall, where not a stone wall, by way of fence, is to be seen; where the tillage land produces excellent wheat and barley, as well as abundant crops of potatoes, which essentially contribute to the comfortable support of many thousand manufacturers in Mr. Wedgwood's bee-hive of commercial industry, the Pottery.

SECT. II.—BROAD-CAST, SEED, AND PRODUCE.

The major part or bulk of the sowing business is done in the old broad-cast way, though drilling is introduced, and has made some progress. The general allowance of seed to an acre in this way, is, of wheat, two bushels, or a little more; of barley three bushels; of oats four to five bushels; of pease three bushels; and of beans, I believe, four bushels; the bushel of this county being in many places nine gallons and a half. The returns or products vary; but to be deemed a good crop, should be, of wheat, twenty-five bushels per acre; of barley thirty; of oats thirty to forty; of pease and beans various. Much greater quantities than the above have been obtained in particular cases, and a bad crop full as often gives less. The largest well-authenticated produce of barley that I know of, was raised a few years since upon Oxley farm, near Wolverhampton, where from twenty statute acres of land, sown broad-cast, Mr. Huskisson carried to market twenty loads of thrashed barley, each load sixty bushels, and each bushel nine gallons and a half, besides the tail-end kept for his own use, which could not be less than three such bushels from every load; making sixty-three bushels per acre, of nine gallons and a half to the bushel, or near seventy-five Winchester bushels per acre. This statement can be proved as a fact by the most unquestionable evidence. Wheat has sometimes produced forty, and oats sixty such bushels per acre.

Drill Husbandry.—The drill husbandry, as stated before, is fairly introduced, and has made some progress. I believe I could name a dozen farmers who have drill-machines, one-half of which are within a few miles of Pendeford. The machines used here do their work pretty well. There are two varieties of them, one invented by Cook, or an imitation of his invention; the other made under a patent granted to a person in Yorkshire, and sold here by Mr. Joseph Cornforth, machine-maker, at five guineas each. The delivery of grain in this is effected by hollows or cavities, cut in a cylinder; that of Cook's by ladles fixed in a cylinder. They either of them deliver several rows at a time, and may be constructed to deliver the rows at any given distance; they have been used for all sorts of grain, but not generally; sometimes rainy weather obliging the owner to do part of his business broad-cast. The following account of drilling I have from gentlemen who have been in the habit of practising that method of sowing.

The Rev. Mr. Dickenson, rector of Blymhill, says, "I have just introduced what seems to me a considerable improvement of Mr. Cook's drilling-machine: it sets the drills at the distance of seven inches; an interval which, in the culture of wheat and barley, is far preferable to nine. Mr. Shenstone of Standyford has, I believe, the merit of having planned the alteration, and gets the machines fitted up: the price of one is about ten guineas, including an allowance to Mr. Cook as patentee. It will drill wheat upon the clover lay, and I do not entertain a doubt of its superiority to broad-cast sowing, in light soils."—I shall just add, that I have had the pleasure of seeing two pieces of Mr. Dickenson's drilled barley, but do not think it superior to what might have been expected from broad-cast sowing.

I have received the following account from Mr. Higgs, Cronkhall, near Wolverhampton.

"I have been in the practice of drilling grain by a machine for the last five years. I began with two acres of barley upon a wheat stubble of the preceding year, in 1790. A wet spring succeeding, filled my ground with weeds; but by hoeing in June following, I had rather a better crop than broad-cast, in the same field; which gave me hopes that if ever I should understand properly the drill mode, it might answer my end. About the Michaelmas following, I sowed six acres of wheat with the drill, and in the spring of 1791, two acres of pease and two acres of oats on a clover lay; as also five acres of barley after wheat stubble: the wheat was part on barley and part on pease stubble. The wheat crop after barley was very indifferent, but that after pease, though in the same field, very great, being thirty-eight strikes per acre, at thirty-eight quarts to the strike, which is equal to upwards of forty-five strikes Winchester. The oats were very indifferent, but the pease produced a great crop, fifty strikes of our measure per acre. The barley also amounted to fifty strikes of my measure per acre. I have still pursued the drill mode in preference to broad-cast, where I can have an opportunity of hoeing; or where the ground has been made very fine by spring ploughing, even if I cannot hoe, as when I sow my spring grass-seeds; but the greatest improvement I have made by drilling has been an old lay turf, particularly in one instance of ten acres. I ploughed the ground in October, 1792, and drilled it with wheat: it was ploughed with a flay plough*, and no manure was used. In the April following it was hoed with a hand-hoe, for which I paid three shillings per acre, and beer. The field produced two hundred and ninety strikes, of thirty-eight quarts to the strike. I am now making a turnip fallow of the same field: it is a deep mixed soil, rather inclining to a light soil. The ground which I recommend for drilling, is a good deep soil, rather light, and free from very long roots; but the cleaner the soil shall be, as in all other husbandry, the better will it be for the crop. Before I sow my wheat I steep it one night in a brine of salt water, mixed up until it will bear an egg new laid, which, I think, preserves my wheat from the smut. If afterwards used for drilling, it should be spread on a floor to be dried before it is used, to prevent it from sticking together, and should not be dried with lime, as in the common broad-cast way.

"There are four farmers within one mile of me, that use the drill machine; and all their drilled crops now growing, look better and much preferable to their broad-cast: but speaking for myself, I give the preference to drilling, which will be seen by the following account of my crops, now growing as under, in which the drilled look far better than the broad-cast. In short, the drill has far exceeded the broad-cast each year I have used it, besides leaving my land, where I can hoe, cleaner from weeds.

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* See Implements of Husbandry.

Crops of the present Year, 1794.

	Drilled. *Acres.*	Broad-cast. *Acres.*
“ Wheat	18	7
Barley	17	1
Pease	9	—
Oats	—	3
Total	44	11

Total .... 55 acres.”

I shall just observe, that Mr. Higgs's arable land is generally a good deep light loam; and that other farmers who have tried the drill-machine, generally speak in favour of the practice.

Respecting the advantages of drilling, and its superiority to broad-cast sowing, the following advantages are obvious: 1. The vacant spaces between the rows can be much easier cleaned by the hoe, than between the plants in broad-cast sowing; 2. The seed is laid in at a more proper and equal depth than by the harrows; and, 3. A saving of seed may be effected of, I believe, one-fourth of the whole. In some other respects, theoretically considered, the broad-cast sowing should seem to have the advantage; for, 1. The young plants promiscuously disposed will have a less distance to draw their nourishment, and will occupy the whole extent beneath the surface with less effort, and with shorter root fibres, than when crowded in rows with open spaces between; 2. The broad-cast sowing is rather more simple and easy in operation, and less liable to be obstructed by change of weather, or showers; 3. In the case of sowing grass seeds with barley, which is or should be always practised, the advantage of hoeing is lost; and in the steeping of wheat for sowing, the drying with lime is lost; in which probably a great part of the health of the operation consists; and the drying by spreading the seed on a floor, seems tedious, and a work of time. It is further to be observed, that for land to be fit for drilling, it should be clean from root-weeds, and in a fine state of culture. I have heard a very sensible experienced broad-cast farmer remark, that when his land is in that state, he can do any thing with it, or get a good crop in any way. I have just further to remark, that I did some years back attempt the drill system, with a view of ascertaining how far foul land, or such as wanted fallowing, could be cleaned by hoeing between the rows, hoping there might be a possibility of precluding the necessity of summer-fallowing; but not succeeding to my mind in this particular, I declined the practice. I would not wish by any means to be understood to have the least wish to discountenance the attempts of others, as I consider the practice of drilling and hoeing the fields in a good style as a very neat mode of culture; and he must always be esteemed an improver of the agriculture of his country, who shall obviate the difficulties attending the drill, and the objections to it, so as to render it of more general utility to the united kingdoms.

Mr. Miller, Dunstall, is a friend to the drill husbandry, which he practises on a considerable scale. He has some barley this season which promises to be an excellent crop: it is but justice, however, to remark, that the broad-cast in the same field is equally good.

The drill husbandry of this county remains in *statu quo*, and is nearly in the same comparative state as it was eight or nine years ago: those persons who have machines and land adapted, occasionally use them, particularly the persons above and before-named; but the advantages are not sufficiently striking to induce universal imitation; and many of the most respectable farmers go on in the old broad-cast way with at least equal success, although some large experiments have been made to exhibit the superiority of the drill system. A neighbouring gentleman, about three years ago, took in hand several hundred acres of his own estate, and procured drill machines and ploughs of various constructions; but after two years experiment the land has been re-lett, and the machinery sold by auction, into hands that use them very little. Some other gentlemen practise the drill system on a smaller scale upon their own estates, but not with such decisive advantage as to bring it into general practice amongst their tenantry. The rage for farming by gentlemen of large landed property, a few years back, has pretty much subsided, in consequence of the low prices of landed produce of the last year (1803), and the high price of labour; and upon the whole, there appears no probability of the drill husbandry at present becoming general.

It may be remarked, that the price of grain, the produce of 1804, has been much higher than the preceding year, the advance having been nearly as three to five.

Seed-time and Harvest.—The seed-time in this county commences in March, and should always be finished in April; but sometimes in some places hangs on through a great part of May. The hay-harvest is from the middle of June to the end of July. Corn-harvest is in August and September; but in some early seasons, pease, oats, and barley, have been harvested about the end of July.

Steeping of Seed.—The steeping or pickling of seed-wheat previous to sowing, is pretty generally practised here, and its propriety established by the most weighty of all arguments, namely, by the most decisive experimental proofs of its good effect in preventing the smut. Various ways are used. That most generally approved is, to immerse the wheat in a brine of salt and water, or urine, mixed up strong enough to swim a new-laid egg; and then stirring it well up, to skim off whatever swims on the surface; and after taking it out, or letting off the brine, to dry it with quick-lime to a state for sowing. In this process the hydrostatical improvement of the seed is evident, by separating from it every seed and grain deficient in specific gravity; and I have never known or heard a well-authenticated instance of its failure in completely preventing the smut; a disease in wheat, which, whoever is well acquainted with, must think serious indeed. The ingredients here used carry with them the idea of health, and are worth all the expense and labour as manure*.

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* Another great advantage attending this practice is gained, by rendering the grain too nauseous for grubs and other insects, and perhaps for some small birds.—*S.*

Weeds.—The weeds to which arable land is subject, are a great plague to the plough farmer, and it is chiefly to their predominance that the necessity of summer-fallowing is to be attributed. The following are the principal weeds that the plough land of this county is most subject to, in which those before enumerated as pasture weeds are omitted.

1. Couch-grass, called here squitch, that plague and curse to arable cultivation. The term squitch signifies the roots of perennial grasses; of no one particular, but of several sorts; particularly the bent grasses *(agrostis's)*, the dog's grass *(triticum repens)*, creeping soft grass *(holcus mollis)*, tall oat grass *(avena elatior)*, and some others*. The roots of these are sometimes so interwoven with the soil in hard tilled worn out land, as to form a perfect mat, and to choke the plough: they abound most in light and mixed soils, and are only to be destroyed by repeated summer ploughings, or by forking them out and burning them.

2. Coltsfoot *(tussilago farfara)*, very apt to abound in hard tilled land. Lord Hawke informed me at the Board of Agriculture, "that the only time to destroy this weed, is by cutting it up in those months when it begins to throw its flower; at which time, if so cut, it will bleed to death†." These months are February or March. Neglected at this time, it will soon after ripen its seed, which, furnished by nature with feathers or wings, flies all over the country, and therefore esta-

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* These roots (particularly the bulbous kind) breed and encourage various destructive grubs, worms, and other insects: there cannot therefore be too much pains to destroy them.—*S.*

† The root creeps under the surface amazingly fast; nothing, therefore, short of a radical cure, will be found sufficient for this evil.—*S.*

blishes itself very quickly on banks of earth newly thrown up. This weed may be considerably weakened by repeated summer ploughings, and may then, for the greatest part, be weeded out, as the ground is thus rendered light.

3. Common or way thistle, cursed thistle, or saw-wort *(serratula arvensis)*, growing every where, may be weakened by good tillage and weeding, but not totally destroyed. This weed seems almost naturally produced by the soil, in consequence of the curse, "thorns also and thistles shall it bring forth unto thee;" yet doubtless, strictly speaking, produced only from its numerous fibrous roots, which are strictly perennial, and from its more numerous seeds, which are feathered, and can fly to any distance with the wind. This plant can only be eradicated by universal agreement to cut it up before it shall seed.

4. Charlock, or chadlock. The yellow-flowered weed termed chadlock by the farmer, is not one individual, but three separate and distinct plants, each species more or less abounding in different places. They are as follow: 1. the rough-leaved chadlock, or wild mustard *(sinapis nigra)*; 2. the smooth-leaved or wild rape *(brassica napus)*; and 3. the rough-leaved wild radish, with white flowers *(raphanus raphanistrum)*. These plants are all annuals, produced entirely from seeds, which they bear in great abundance, and which seeds will lie in a clod as safe as in a granary, and vegetate at the end of twenty years, when ploughed up and exposed to moisture. These intruders are only to be extirpated by ploughing them under when the field is fallow, or by weeding them out of the crop before their seed shall have been ripened; for if suffered to perfect and shed their seed,

each single plant will produce an hundred; the farmer should therefore carefully prevent this, by weeding or hoeing them out in time.

"One year's seeding makes seven years weeding," is an apophthegm which should be strongly imprinted in the farmer's memory. The increase of the above and some others of our field weeds, when they are permitted to shed their seed, is beyond all calculation.

5. Ivy-leaved speedwel *(veronica hederifolia)*, sometimes very much abounding amongst wheat very early in the spring, but seeding and leaving the ground early, and perhaps not much injuring the crop, would probably be best destroyed by working and pulverizing the fallows very early in the season, which would occasion the seeds to vegetate, and the plant would be destroyed by ploughing it under, without giving it time to perfect its seeds.

6. White darnel *(lolium temulentum)* is produced from seed sown from wheat, to prevent which great care should be taken. This weed is extremely prolific, and very injurious to a wheat crop when growing, and to its value at market: it is an annual plant, which may be avoided by attention in the choice of seed.

7. Goose-grass, catchweed, or cleavers, called here Eriff *(galium aparine)*. I have known this plant very troublesome in a wheat crop, twining and crawling up the straw or stem, but is not very common in well-managed land.

8. Bindweed *(convolvulus arvensis)*; a troublesome parasitical weed, but not so abundant here as I have seen it in some of the chalk counties.

9. Shepherd's needle, here beggar's needle *(scandix pecten Veneris)*; sometimes very abundant in hard-tilled

tilled land, and its seed not easily separated from corn in dressing or winnowing.

10. Common chickweed* *(alsine media)* abounds most in land rendered fine by repeated ploughings.

11. Pale arsmart or lakeweed *(polygonum pensylvanicum)* abounds most in wet seasons, on moist land.

12. Black bindweed, or bearbind *(polygonum convolvulus)*. This is also a parasitical plant, twining round any thing it can lay hold of. Dr. Withering recommends it for cultivation, preferring it to buckwheat, to which it is nearly allied.

13. Bladder champion *(cucubulus behen)*; often growing amongst barley on light land.

14. Cockle *(agrostemma githago)*. Care should be taken not to sow this weed, it being very injurious.

15. Corn poppy *(papaver rhoeas)*; sometimes very abundant on light land in dry seasons, and a pretty sure indication of a light crop.

16. Corn crowfoot *(ranunculus arvensis)*. I have seen this plant so abundant, as to be very injurious to a wheat crop on strong moist land.

17. Dead nettle *(lamium purpureum)*; abounding sometimes in wet seasons.

18. Bugle *(ajuga reptans)*; common in wet seasons.

19. Shepherd's purse *(thlaspi-bursa-pastoris)*, well known sometimes as a troublesome weed.

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* It may be worthy of remark, that chickweed is an excellent out-of-door barometer: when the flower expands boldly and fully, the farmer, &c. need not be apprehensive of rain for four hours, or upwards; if it continues in that open state, no rain will disturb the summer's day; when it half conceals its miniature flower, the day is generally showery; but when it entirely shuts up, or veils the white flower with its green mantle, let the traveller put on his great coat, and the farmer, with his beasts of the plough, rest from their labour.—*Rev. S. Shaw.*

20. Fumitory (*fumaria officinalis*); abounding sometimes on land in fine tillage, but not very pernicious.

21. Tare (*ervum tetraspermum*); a terrible enemy to a wheat crop where it abounds. Care should be taken to purge land intended for wheat, of this plant, by fallowing and repeatedly ploughing and harrowing fine, all land subject to it, previous to sowing the wheat. The seeds are good food for pigeons and poultry.

22. Groundsel (*senecio vulgaris*); a garden weed, but not uncommon in corn-fields in a good soil. It should be destroyed previous to shedding its seed, by weeding out or ploughing under: its seeds ripen rapidly, and fly over a country by the wind. It abounds in the hop-grounds in Kent, and is considered there as a sign of land in good condition.

23. Corn marigold (*chrysanthemum segetum*); sometimes very troublesome and injurious to a crop.

24. Stinking chamomile or may-weed (*anthemis cotula*); a disagreeable and troublesome weed.

25. Knapweed, or blue buttons (*centaurea's of sorts*); not easily prevented or destroyed on some lands.

26. Corn horsetail (*equisetum arvensis*); a hardy perennial root weed, not easily destroyed.

27. Female fern (*pteris aquilina*) abounds most in very dry, sandy land.

Summer-fallowing well managed, has a tendency to extirpate all sorts of weeds; for the pulverizing of the soil by frequent ploughings and harrowings, combined with the effects of dews, showers, and the solar warmth, disposes the seeds, roots, and prolific principles of all plants to vegetation; which vegetation being effected, and the young plant in a growing state, it is completely destroyed by the next ploughing: this several times repeated, purges the land of weeds, and its whole vegetative force is in consequence directed to the support of the particular vegetable whose seed is thrown in by the cultivator; or should a few weeds remain undestroyed, they are to be drawn out, or cut up by weeding. Upon these considerations are founded two very obvious and just principles of practical agriculture, viz. 1. The necessity of summer-fallowing foul land; 2. The propriety of being very careful in the choice of seed.

CHAP. VIII.

GRASS.

SECT. I.—NATURAL MEADOWS AND PASTURES.

THE natural situation of meadow and pasture land, is on the sloping sides of vales, where the sediment of water from the upland has for numberless ages been accumulating and increasing the soil; and the stagnant water, for an equal length of time, has in the lower parts accumulated the increasing roots of aquatic vegetables into regular beds or stratums of peat: by the complete drainage of such peat a fermentation is brought on, and its surface is converted into vegetable mould, which by top-dressing, consolidating by rolling, and the other operations of agriculture, is rendered productive of grass, and becomes meadow land; as by these operations, the vegetable matter of the peat (which before was in an inert state) is brought into action, and an improved peat-moss, in length of time, becomes valuable meadow land.

That part of a vale which is composed of sediment of water brought from the uplands, is, however, generally richer, and produces herbage of a better staple, than that whose origin is from decayed aquatic vegetables. Some of the richest meadow land in this county, or in the kingdom, has originated from the sediment brought thither by water accumulating and increasing from the beginning of time.

It may be ranked amongst the bountiful dispensations of Providence, that this kind of land, though generally unfit for corn or cultivation, is of all others the most productive of grass and hay; yielding sustenance for cattle through the summer and the winter, and producing an everlasting source of manure for the improvement of the adjoining upland. In all cases of extensive enclosures, the improvement of the vale land, or that land formed by Nature for meadow and pasture, should be first attended to.

The low lands adjoining all our rivers and brooks, come naturally under this head of meadows and pastures, as well as considerable tracts of flat land, which, by the backing on of water in former times, have acquired a stratum of peat on their surface.

Considerable tracts of meadow land, lying near the larger brooks and rivers, are improved, and kept in sufficient heart by the natural overflow of the streams; but this advantage is enjoyed at the risk of having the whole crop occasionally swept away by untimely floods, a misfortune too, which occurs pretty frequently.

The fertile meadows on the banks of the Dove, are an object considerably interesting. This river, which separates for many miles the counties of Stafford and Derby, rises from springs under the limestone hills of the Moorlands and the Peak; and at times receives an amazing addition, from torrents rushing down those hills after heavy rains or the melting of snow. Its channel has a great declivity, and in many places this river comes tumbling over the rocks in cascades;

and in its greatest swell pushes on with astonishing rapidity, which continues to below Rocester, where the water has a greyish cast, apparent to the eye, from its being impregnated with calcareous earth, to which undoubtedly may be attributed the extraordinary fertility of its banks: for after receiving the Churnet, a considerable stream from a part of the Moorlands, not abounding with limestone, its water becomes diluted; and although its banks still continue excellent, yet they visibly decline in richness, and the extraordinary fertility ceases. Immense quantities of limestone are found both on the banks and in the channel of the Dove, in the first part of its course: this limestone has fallen in length of time from precipices, which overhang the river. The fertility of land on the upper parts of this river, about and above Rocester, is, and always has been proverbial; "as rich as Dove," being an epithet applied to any spot highly forced*. This land has a perpetual verdure, and the spring-floods of the river are very gratifying to the land-occupiers, who have this proverb, "in April, Dove's flood is worth a king's good." It is also said of Dove banks in spring, that a stick laid down there over-night shall not be found next morning for grass. It is very certain this river fertilizes its banks like another Nile; but sometimes rises so high in twelve hours as to carry off sheep and cattle, to the great alarm of the inhabitants; and in as few hours abates, and returns again within its own channel. Below Rocester, where this river receives the Churnet, the plain spreads

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[*] The farmers are accustomed to say, that it is scarcely possible to over-stock a few acres of Dove land.—*Rev. Stebbing Shaw.*

very wide, and continues so with variations to below Uttoxeter. The plain here, on either side the river, is composed of deep rich mellow loam, impregnated with, if not wholly formed of, a rich sediment of mud and calcareous earth. The herbage is very fine, without any mixture of rushes or aquatic plants. The grasses are of the common sorts; but the foxtail, the vernal grass, the *poa's*, the dog's-tail, and the meadow *bromus's* predominate. It contains also rib-grass, meadow and white clover, upright crowfoot, and the common herbage of other meadows: not without a mixture of the cursed or common thistle, or saw-wort, (*serratula arvensis*), so common in every soil and country. The plain within reach of the floods of the Dove, extend, in some places to near a mile in breadth, particularly opposite Uttoxeter, and amounts to several thousand acres, almost entirely pastured with cows, sheep, and some horses: very little of it being mown for hay. The uncertainty and suddenness of the floods make the risk of hay too great. The rent of the Dove land generally rises to near forty shillings per acre; and I was informed by an eminent grazier on the spot, that were it not for the inconvenience of floods, the land, equally rich as at present, would be worth ten shillings per acre more, even for grazing: as it sometimes requires a sharp look-out to preserve the stock from drowning, even where there has been little or no rain on the spot. A sudden rain or melting of the snow on the Moorland or Peak hills, is sufficient to inundate large breadths of land near this river: as the declivity or fall is great, the swell of water is sudden, but soon over, and the largest floods continue but a few hours. It is to be remembered, however, that the extraordinary fertility of these lands is owing to this circumstance, however complained of as an inconvenience.

The most remarkable wild or native plants, that I noticed growing near the Dove, were,

1. Wild rape (*brassica napus*); as luxuriant as any I ever saw cultivated.
2. Tansy (*tanacetum vulgaris*).
3. Water mustard (*erisymum barbarea*).
4. Butterburr (*tussilago petasites*).
5. Jack by the hedge (*erisymum alliaria*).
6. Hemlock (*conium maculatum*).
7. Figwort, or water betony (*scrophularia aquatica*).

The following is a list of our principal spontaneous pasture and meadow herbage, in which each species is placed in rank according to the Writer's conception of its merit; but such superiority being matter of opinion, may possibly be varied and otherwise decided by future experience and observation.

1. Meadow grasses (*poa pratensis et trivialis*).
2. Annual meadow grass* (*poa annua*), a sweet and fine grass, but not very productive, might with propriety be termed *poa quadrans annua*, as it will produce and reproduce itself by its own seed four times a year. Could the seed be procured in sufficient quantities, it is certainly well worthy of cultivation, producing in quick succession an infinity of blades of grass, and being a sweet and fine pasturage.
3. Meadow fescue (*festuca pratensis*).
4. Foxtail grass (*alopecurus pratensis et agrestis*).
5. Soft grass (*holcus lanatus*).
6. Dog's-tail grasses (*cynosurus cristatus et echinatus*.)

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* "Or Suffolk grass; this seeds three, or four times a year, after which the old root dies."—*S.*

7. Vernal grass (*anthoxanthum odoratum*); fine, sweet, and early, but not very productive.

8. Rough cock's-foot grass* (*dactylus glomeratus*); coarse but very productive, and by some much esteemed; probably makes good hay intermixed with the other finer grasses.

9. Water meadow grass (*poa aquatica*) grows very tall, to six feet high and upwards, extremely productive; very common by the sides of streams, in hedges, and sometimes in pretty broad patches on water meadows. Mr. Curtis informs me this grass is cultivated in the Isle of Ely, and it is probably well worthy of attention in proper situations.

10. Reed canary grass (*phalaris arundinacea*), rather finer than the last, but stalky, very tall and productive, equally common, or rather more so than the last: in the province of Scandia, they mow it twice a year; and their cattle eat it: Linnaeus.—It is probably worthy of cultivation in some situations: a variety of this grass, with beautifully striped leaves, is cultivated in our gardens; under the name of painted lady grass, or ladies' traces.

11. Meadow oat grass (*avena pratensis*).

The above grasses are certainly all well worthy of trial in cultivation: the following also are common in meadows and pastures.

12. Bent grasses of sorts (*agrostis's*, principally the *capillaris alba et stolonifera*). These, though valuable in meadows, are very noxious and troublesome in

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* "As this grass vegetates much quicker, and in much greater luxuriance than any other on dry land, and is eagerly eaten by all sorts of cattle when young, it might answer to cultivate a flat of ground with it, to be cut for green food, and if kept in good heart, would bear mowing three times in the season."—*S.*

arable land, being the basis of that curse to the plough farmer, the black, or beggarly, couch or squitch grass. These grasses are so hardy, that they will grow in any soil, moist or dry; and the more land is run out, beggared, or impoverished by hard tillage, the more they will run in the root and abound.

13. Tall oat grass (*avena elatior*). This, though a troublesome weed in arable land (being the knobby or bulbous-rooted couch-grass), is yet probably worthy of cultivation in meadows, being very hardy, productive, and flourishing in all seasons; it makes good hay intermixed with other finer grasses.

14. Dog's-couch, or squitch grass (*triticum repens* and *caninum*) S. not very common in meadows and pastures, but chiefly abounding in gardens and hedges. The common squitch grass of arable lands has been often erroneously called by this name.

15. Flote grass (*festuca fluitans*); generally growing in water, it is a sweet and good herbage, and very productive. Many a poor old horse has been bogged in searching for this grass, of which they are remarkably fond.—Remark of a botanical friend: geese are very fond of the seeds of this grass, and well know where to look for them, and ducks more so; it is difficult to collect the seeds, or they would be very valuable on many accounts.—S.

16. Water hair grass (*aira aquatica*); generally grows in water, and is common here; it exceeds all the other grasses and most of our native plants, in a palatable sweetness, nearly resembling liquorice: cows are very fond of it; horses and sheep eat it.

The other most common grasses are, Timothy grass (*phleum pratense*), hair grass (*aira cæspitosa*), quake grass (*briza media*, brome grass (*bromus erectus*, *arvensis*,

arvensis, et sterilis), meadow barley grass (*hordeum pratense*), creeping soft grass (*holcus mollis*): also in wet, boggy, or swampy situations, various sorts of seg grasses, provincially hard grass, iron grass, carnation grass (*carex's*): these, upon draining and top-dressing their native bogs, generally give way to the more valuable grasses.

The other principal meadow herbage, valuable for hay and pasturage, are, 1. The meadow or cow clover (a variety of the *trifolium pratense*); the seed of which is professed to be sold under the name of cow grass.

2. Long-leaved perennial clover (marl grass of Hudson*, *trifolium flexuosum*); common in hedges and ditch banks in the clayey soil in the parish of Blymhill. Being perennial, and growing spontaneously in strong soils, the Rev. Mr. Dickenson highly recommends the cultivation of it in such soils, mixed with common clover and ray grass. This plant is also common here upon mixt gravelly loam, sometimes in shady, and sometimes in open situations; but having a disposition naturally to propagate itself by running in the root, I am afraid its seed will not ripen in sufficient quantity for any considerable scale of cultivation: the attempt of raising its seed is, however, well worth making.

3. Trailing trefoil (*trifolium procumbens*); a sweet, fine, and good herbage.

4. Bird's foot trefoil (*lotus corniculatus*); in all situations, open and shady, moist and dry, apparently

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* (*Trifolium angustifolium*) Mr. Sneyd: if this clover had the advantage of tillage, it would be nearly as profitable as lucerne in the broad-cast cultivation, on account of the length and succulence of its stalks, and would last much longer in the ground than any other clover, except the white, which spreads itself by its runners.—*S.*

worthy of cultivation. A single attempt of mine to raise a garden-bed failed; the seed of my own gathering never vegetated.

5. Perennial tufted vetch (*vicia cracca*); excellent pasturage, and a good mixture in hay; not uncommon in hedges and meadows; highly worthy of cultivation. This perennial vetch is distinguished from the common annuals by its long fruit stalk, upon which the flowers and pods are supported at a distance from the stem; whereas those of the annuals are short and close to the stalk.

6. Meadow vetchling (*lathyrus pratensis*); in hedges and meadows; common. For the cultivation of this plant a premium has been offered, I believe, by the Bath Agriculture Society; yet there is reason to think that cattle are not fond of it, I having often observed it untouched on the hedge-side of a stocked pasture: it is probably most proper as a mixture in grasses for hay, and possibly eaten by cattle mixed with grasses.

7. Meadow burnet* (*sanguisorba officinalis*); common and plentiful in some meadows; also growing very luxuriantly in cold and very poor wet upland, particularly on Bentley estate near Walsall, and between Walsall-wood and Cannock-heath: a hint from Nature, that it should be cultivated on such land, as it certainly should, if its seed can be preserved in sufficient quantity.

8. Meadow sweet (*spiræa ulmaria*); coarse, but not disesteemed by some. The farina or dust of the ripe blossoms of this plant, which is very abundant, is also, I have been told, an excellent styptic, and has been used with great success in stopping hæmorrhages.

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* So named from its styptic quality.—*S.*

9. Cow

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9. Cow weed (*chærophyllum sylvestre*); has an uncouth and weed-like appearance, resembling hemlock, but paler in colour; is very common in some meadows and pastures, and has been used as a pot-herb, according to Curtis. Cows are so fond of it, that when a pasture is over-run with it, as is often the case about Dudley, they always turn them in to eat it up, as observed by Mr. Wainwright, in Withering's Botany. It is very common about Wolverhampton and Wednesfield. Cows eat it greedily, and I believe it is wholesome for them.

10. Meadow sorrel (*rumex acetosa*); common in meadows. All sorts of cattle eat it, and I doubt not that its acid is grateful and wholesome to them, and I believe it to be good herbage.

11. To these I shall add the crowfoots (*ranunculus's*), so very abundant in our meadows and pastures, and which, though in themselves so acrid and pungent, are notwithstanding most certainly a grateful and desirable admixture. They seem intended as seasoners and correctors, and to be adapted to uses in the animal economy similar to that of salt, mustard, pepper, and vinegar, at our tables; to correct the flatulent or putrid qualities of the more palatable and luxuriant dishes on the great table of Nature. It is said in Withering's Botany, of the *ranunculus acris**, that "cows and horses leave this plant untouched, though their pasture be ever so bare." I believe this to be only true of the flower stem, or when there is not a sufficient admixture of other more palatable herbage.

The following I consider as neutral plants, or such as are neither worthy the farmer's attention to encoutage their growth, nor his efforts to destroy: the foliage of many of them is eaten by cattle without injury, either green or in hay, in common with other herbage.

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* It is excellent when made hay of, with grasses and other plants.—*S.*

1. Dandelion* (*leontodon taraxacum*); very common; considerably diuretic; has probably a good effect upon cattle, from that quality, at their first going to green or grass.

2. Daisy (*bellis perennis*).

3. Daffodil (*narcissus pseudo-narcissus*).

4. Harebell, English hyacinth (*hyacinthus non scriptus*).

5. Fritillary (*fritillaria Meleagris*). This very curious and rare flower, adorns in great profusion some meadows about one mile from Blymhill, in the parish of Wheaten-Aston, as observed to me by the Rev. Mr. Dickenson.

6. Cowslip (*primula veris*).

7. Primrose (*primula vulgaris*).

8. Lady-smocks, several sorts (*cardamines*); principally the *pratensis* and *hirsuta;* the foliage probably wholesome food, and good in hay.—S.

9. Wood or meadow anemone (*anemone nemorosa*); very common here in meadows; the flowers fold up in a curious manner against rain; the whole plant is acrid: when sheep that are unaccustomed to it, eat it, it brings on a bloody-flux, as observed in Withering's Botany.

10. Goose-grass (*gallium palustre et uliginosum*), called goose-grass, from geese being very fond of them.—S.

11. Bistort (*polygonum bistorta*); common in moist meadows; also in very high pasture ground at Essington, in the parish of Bushbury. The roof is one of the

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* The yellow goat's beard (*tragopogon pratense*) has similar qualities.—S.

strongest vegetable astringents, as Withering informs us. If it would tan leather it would be worthy of cultivation, the root being productive, and the species prolific. This plant in some places wholly occupies large patches of ground, to the injury of better herbage.

12. Cinquefoils (*potentilla verna et reptans*).

13. Meadow rue (*thalictrum flavum*); in a meadow on my farm in considerable quantity.

14. Valerian (*valeriana officinalis*).

15. Orchis's, several sorts.

16. Meadow boot (*caltha palustris*).

17. Ladies' mantle (*alchemilla vulgaris*).

18. Yarrow (*archillea millefolium*). Sheep and cattle eat it, and it is recommended for cultivation on poor land, by Anderson.

19. Restharrow (*ononis arvensis*); rather to be extirpated than encouraged, though cattle will eat it when young, and it is very productive. The roots of it are very troublesome in arable land, being strong, and almost stopping the plough. In some of the chalk counties I have observed a worse kind still, viz. the prickly, thorny, or spiny restharrow (*ononis spinosa*), but I have never found any in Staffordshire except the smooth plant first named.

20. Yellow rattle (*rhinanthus crista galli*), called also penny-grass, from the flat round shape of the seeds, which are very nutritive.—S.

21. Red rattle, or louse-wort (*pedicularis sylvatica*). This should have been classed amongst weeds or noxious plants, as Withering says of it, that if the healthiest flock of sheep be fed with it, they become scabby and survy in a short time, the wool gets loose, and they will be over-run by vermin: it is,

doubtless, a bad plant, but may be weakened or destroyed by draining the land.

22. Eyebright (*euphrasia officinalis et odontites*).

23. *Veronica's*, several sorts.

24. Purging flax (*linum catharticum*).

25. Centaury (*Chironia centaurium*).

26. White saxifrage (*saxifraga granulata*); on meadows in the Moorlands.

These are the most common; many others are omitted. Some of them have their known uses; to others no attention is paid, but what they claim from the beauty of their flowers; and, perhaps, as Dr. Withering has observed, a display of beauty may have been, in some measure, the design of the great Creator.

Weeds, or noxious plants, common in pasture and meadow land, which the farmer's industry should be employed in destroying and extirpating are,

1. Dock (*rumex crispus*); to be destroyed only by perseverance in rooting up.

2. Thistles of sorts (*carduus's*), particularly the *lanceolatus palustris* and *pratensis*: they should be cut off within the ground, or rooted up.

3. Napweed (*centaurea nigra et scabiosa*), should be rooted or cut up, being useless and unsightly.

4. Ramsons (*allium ursinum*); meadows at Horsebrook and elsewhere, gives a garlic flavour to milk.

5. Goose tansy, silverweed, or feathered cinquefoil (*potentilla anserina*); common in many pastures, but generally untouched by cattle; should therefore be extirpated to make room for better herbage.

6. Rushes of sorts (*juncus's*); a sure indication of stagnant water, and that the land wants draining.

7. White dead nettle (*lamium alba*).

8. Hogweed*, or cow parsnip (*heracleum*). This plant (Variety 2. the *angustifolium*) is very abundant in an upland mowing meadow near Dudley-castle; and though I believe cattle will eat it without injury, yet it is certainly too coarse and weed-like to be suffered to abound in well managed land.

9. Wild carrot (*daucus carota*).

10. Dog's mercury (*Mercurialis perennis*); very common in the sides of hedges. Withering's Botany says this plant is noxious to sheep; which if true, some pains should be bestowed in its extirpation.

11. The common, cursed, or way thistle (*serratula arvensis*); every where.

The leading features of improvement to be effected by agriculture upon meadow and pasture land seems to be,

1. By draining of all boggy, swampy, and morassy spots, either by open or hollow drains.

2. By improving the herbage where rough and coarse, either by weeding and top-dressing, or by pulverizing and seeding down with a judicious selection of proper seeds, and laying the surface in a form and disposition to clear itself of surface water, and receive future improvement.

3. By extending as much as possible the practice of irrigating the surface of all land capable of that improvement, with water judiciously applied, and properly taken off.

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* A good plant for neat beasts, which they are very fond of when cut young. If this plant had the advantage of tillage it would answer well to the farmer, and would bear cutting two or three times in the season.—*S.*

4. By top-dressing with the most ameliorating manures that can be procured.

5. By stocking at proper times, and with a properly mixed stock; by which management the herbage being closely bitten will be kept fine, and the surface not being trodden in or poached upon, will be kept regular. There are few spots so barren or ungrateful, which by this mode will not be made useful meadow and pasture land. Considerable attention is at present paid to these subjects by many spirited and judicious managers; and a more general attention to these particulars, would doubtless be productive of the most beneficial consequences.

To these may be added, the use of heavy rollers drawn at times over the land, particularly in the spring season, by which means the surface is rendered close and even, the soil is pressed close to the roots of the grass; the whole is rendered compact and neat to the eye, and if the field be mown for hay, the scythe may be laid in close to the ground.

SECT. II.—ARTIFICIAL GRASSES.

The grass seeds generally sown for laying land to permanent pasture, are, 1. red clover (*trifolium pratense*); 2. white clover (*trifolium repens*); 3. trefoil (*medicago lupulina*); 4. ray grass (*lolium perenne*); also hay seeds collected from the loft, in which every attentive person is as careful as he can be to make a good selection, by reserving the hay seeds from the produce of lands the cleanest from weeds. In addition, many persons, with a laudable view to improvement, have attempted to introduce fresh grass seeds; particularly, first, the meadow or cow clover; but I believe there are few, if any instances here, wherein it has not turned out to be the usual biennial clover.

2. Burnet (*poterium sanguisorba*) has been sown by many persons of late years, and by some on a broad scale. I know it from experience to be a valuable addition to cow pastures, hardy, and strictly perennial. Cows prefer it to clover, and it is doubtless wholesome for them: sheep and horses prefer clover; and it is by no means so productive as the broad-leafed red clover. A very attentive friend and neighbour* of mine, who keeps a very large dairy, and has for some years back sown large quantities of this plant, is so very partial to it, that he would this year have sown ten hundred weight of the seed, could he have procured it. It is certainly a good mixture with other herbage, with which it but little interferes, drawing its nourishment deep from the earth by a long tap root. It is a native of some of the midland counties, upon dry calcareous soils, particularly Rutlandshire, where it abounds spontaneously in common fields, road sides, and even upon commons wholly uncultivated; it is a very different plant to the meadow burnet (*sanguisorba officinalis*), springing out and flowering some months earlier. I have since found it indigenous in the Moorlands of Staffordshire, particularly on the Weaver-hills, and between Wetton and Warslow†; also abundantly on Salisbury-plain.

3. Sainfoin (*hedysarum onobrychis*) has been tried, but has not succeeded, and the soil is probably not

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* Mr. Miller.

† Also in Dovedale, chiefly growing on limestone.—S.

adapted to it. It prospers best on thin-skinned limestone.—*S.*

4. Lucerne (*medicago sativa*) has had several small experiments. It requires cleaning with a good deal of care for the two or three first years, after which you can scarcely destroy it*. I had early this spring a garden-bed of this plant dug under (being tired of it), which notwithstanding is now shooting out vigorously. There is some reason to dispute its superiority to red clover, either in quality or bulk of produce.

5. Rib-grass (*plantago lanceolata*) is also sown in considerable quantities, and by many approved as a good mixture with clover and ray grass. There is good authority for asserting that cattle will not eat its leaves alone; but it is believed to be a grateful mixture with other herbage†.

None of the native individual grasses have, to my knowledge, been cultivated in this county, except the ray grass before named, and the oat grass (*bromus mollis*), though many of them are apparently much more worthy of it.

The quantity and extent of our permanent meadow and pasture land might be much increased by a more general attention to all streams and rills of water, and by drawing them along higher levels, which would enable the occupier to water all lands below such level; this would render such land more productive of pasturage and hay, and would enable the farmer to cultivate a larger proportion of the upland for corn. This subject will be farther treated on, Chap. XII. Sect. 5, article *Watering*.

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* It must always be kept clean, and sometimes manured; it always answers best transplanted.—*S.*

† Rib-grass: I am lately informed by a very considerable and attentive grazing farmer, that the greater value of this plant is in its seeds, which when formed, are eagerly sought for and greedily devoured by cattle and sheep, and that they are very nutritive.

SECT. II.—HAY HARVEST.

THE hay harvest of this county is mostly in July; upon regular farms the artificial grasses, clover and ray grass, are generally cut first, and the meadow grasses follow; on the highly forced lands in the neighbourhood of large towns, the meadow grass is somewhat earlier than in the country. The seasoning or making of clover and ray grass into hay is as follows: after mowing, the swaths are suffered to remain till they are well dried on the upper side, they are then turned over, and the other side dried in like manner, and afterwards turned a second time if necessary; they are then got together, raked, and carried to the stack; the stalks of clover take a good deal of time to dry thoroughly, the time for which is facilitated, as well as the effectual making of it secured, by sunshine and fair weather; no other method of securing clover from the weather is (that I know of) practised here; and it is supposed to save itself best in the swath unbroken; a large crop is very bulky, and would require much labour to bind it in sheaves, as has been proposed by some, but would not, I think, answer.

Respecting the making of hay from meadow grass, the first operation after mowing, is spreading it all over the meadow, which is here called tedding; it is then raked into win-rows, and the win-rows farther divided into small cocks, called grass cocks; next morning (if fair weather) the grass cocks are cast about into square beds, the vacant spaces between the beds (if any) raked clean; the beds, after turning, are put into middle sized cocks, called quarter cocks; next morning (if fair) the quarter cocks are again spread open, if necessary, and turned over; and then put into large cocks; it is then fit for carrying to the stack. The time for these operations, as well as their effect, is much facilitated and improved (as before named) by sunshine and fair weather.

In showery or casualty weather, the following process is recommended as superior to the above; and is in such cases often practised: after mowing, and the swaths being somewhat seasoned, rake them clean over; when the other side is seasoned, make them into small cocks; when the cocks are dry on the upper side turn them over, and when dried on the other side, half a dozen of them may be put together into quarter cocks, and so by degrees into large cocks; this process will require more time than the former; but will keep the hay much better protected from the weather. The injury hay sustains from rain, being when it is spread all over the ground, in which case if the rain continues the hay will lose its juices and its colour; whereas, if hay be in cock, with the ground bare between the cocks, it will sustain a deal of rain without injury. In the last described process the hay-making will be much facilitated by due attention to hours of sunshine, and by then spreading about the cocks a few at a time, or as many as the continuance of the good weather will permit; getting them up again hastily upon the approach of rain: I believe by diligence and due attention to this last mentioned process, hay may be preserved from sustaining much damage in almost any season. All the above-mentioned operations should be performed when the hay is dry: it must, however, be admitted, that sunshine and fair weather in hay harvest are very desirable.

No sainfoin hay is made in this county, and little, if any, from vetches, this latter being generally either carted green to the stable, or reserved for seed.

Respecting the stacking of hay, some people carry tunnels up their hay-ricks, either by drawing up a binding of wheat straw, or by actual tunnels of wood; these are meant to discharge a part of the vapour generated in fermentation, and thus prevent any danger of the hay firing; those who practise it, remark that they can carry their hay a day or two the sooner. Many persons, and amongst them the Writer hereof, never used any such precaution, nor is it necessary if the hay be sufficiently made, and put together in stacks not too wide at bottom; I think a bottom four yards wide at beginning, is enough, if the sides be a little sloped outwards, and the stack carried to a sufficient height. The propriety of discharging any part of the vapour arising by fermentation, from haystacks, has been questioned by some, who think it should be smothered and retained in the hay as much as possible, and that no other precaution is necessary than due attention to the hay-making.

SECT. IV.—FEEDING.

STAFFORDSHIRE is not considerably a feeding county, at least not in any degree comparable with the adjoining one of Leicester; yet there are some gentlemen who farm, and considerable farmers, who think much of the trouble of a dairy; who fatten a good many cattle and sheep; calves and hogs are fattened upon most farms; the horned cattle fattened here are principally heifers and cows, with no considerable proportion of bullocks; these are mostly bred in the county, which I suppose breeds more cattle than it consumes, as a considerable number of in part fed cattle are sold to dealers, who drive them towards the metropolis.

Cattle are sometimes fatted, at others only brought forward by grass, and in the latter case finished by stall-feeding; a heifer brought into good plight by grass, will generally, on the approach of winter, come on well in a stall with turnips and straw only, but must have a plentiful allowance of the former: potatoes have been given with success, but their use for fatting cattle is not very extensive; ground barley has been given when that grain is plentiful and cheap; but otherwise only tail-end or damaged barley can be offered. Linseed oil-cake is also a good deal used, and has been long persevered in by some, and I believe answers well for stall-feeding; to these may be added the other kinds of grain and pulse broken or bruised, the refuse of the flour manufactory, or what is called here sharps and gurgeons, which is the bran of wheat not wholly divested of its flour, also the bran itself. Cabbages are also given, as well as hay: cattle thus fatted are generally sold to the butcher during the winter, and before the coming on of the spring grass.

Dried on barren cattle are often kept during the winter in a turnip field, with a little hay or straw given in severe weather; or kept in the turnip field in the day time, and in a yard at night; or on a turf in the day time, with an allowance of turnips drawn to them, and hay or straw given in the field or in the yard at night: with a tolerable allowance of turnips in this way, they will thrive and improve during the winter, and may be either finished fatting at the spring grass, or sold to dealers at the early spring fairs, who buy up with avidity all such cattle, being dry and in an improved state. A system of fatting cattle has not in general been supposed to pay so well as dairying, nor indeed ought it, as the labour is considerably less.

Sheep are fatted with the summer's grass, or clover, the latter supposed the better pasturage for that purpose; and what are not sold during that season are kept in winter on turnips: a little hay is given in severe weather; and corn by some who are curious in their flocks; but the use of corn for this purpose is not very extensive. From the native or common breeds of sheep of the county the lambs are often sold fat; calves are oftentimes well fatted, especially during the winter, when they are suckled to six, eight, or ten weeks old, and sold from two to four guineas.

A good many hogs are fatted in this county both for pork and bacon; their food generally in the country either the refuse of the dairy, or potatoes boiled and broken with a little barley flour beat in; also pease, and pease meal; in town various kinds of offal, and the refuse of butchers' shambles, with bran, sharps, gurgeons, barley meal, pease meal, and bean flour, are the general food.

MR. ANSON'S* FARM.

Since drawing up the original Agricultural Survey of Staffordshire, Mr. Anson of Shuckborough, has increased his occupation, by taking into his hands a large tract of land. This is now managed in a very good style, and having lately viewed these premises, I think it better to keep the whole account together, than to disperse it among the various articles of this work.

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* Now Lord Anson.

The family-seat of Shuckborough is an elegant and magnificent building, covered with white stucco in the best style; it is delightfully situated in the Vale of Trent, at the confluence of the Penk and Sow with that river, and between Stafford and Lichfield, for which latter place the owner is one of the representatives in Parliament. The Vale of Trent I have always looked upon as the garden of Staffordshire: the demesne is a rich plain of some hundred acres, well wooded and watered by the above rivers; and skirted round by distant hills, variously disposed by Nature and Art, part in arable culture, part plantation, and some in a state of native wildness. On the eminences are an obelisk, and a triumphal arch, erected in honour of the great naval commander, George Lord Anson, who was of this family. The shrubberies and pleasure-grounds are extensive, and laid out in the best modern taste, well decorated with fancy buildings and sculpture, and kept in the utmost style of neatness; a kitchen-garden of several acres is walled and subdivided; the walls well stored with the choicest fruit trees, with very extensive ranges of hot-houses, in which the pine apple, the grape, the peach, the fig, and many other varieties of hot-house fruits, flowers and plants, are cultivated in the highest perfection.

One of the hot-houses is heated with steam, in which melons and cucumbers are produced in perfection at all seasons of the year.

Mr. Anson's farming is to the extent of 2000 acres; a farm-yard has been constructed at a convenient distance from the family-seat, under the direction of Mr. S. Wyatt, the architect of London, consisting of the farming steward's house at one end; a range of building along one side contains a brew-house upon a large scale, a water corn-mill for the family and farm use, and in which corn is ground for the neighbouring poor gratis, and a malt-house: the opposite side and end are occupied by stalls for feeding cattle, store-rooms, stables, and other appendages; and in the middle of the yard is a very complete hoggery, built of large stones set edgeways, and covered with slate, with a boiler for heating hog food, a cold bath supplied by the mill stream, for giving an occasional swill to the young pigs, and in which a number of hogs are fatted on dairy refuse, boiled roots or vegetables, pulse, ground barley or bran, supplied by the mill near at hand.

At some distance above is the stack-yard and barns, where a powerful thrashing-machine is worked by the same stream that afterwards supplies the garden, and turns the corn-mill in the farm-yard: this machine will thrash out 200 bushels of grain per day completely, and cost less than 100*l.* erection; but in this expense the barns are not reckoned, as being before erected, nor the mill-wheels, these being erected by a millwright, independent of the thrashing-machine constructor.

Arable Cultivation.—This has been upon so large a scale, that 1100*l.* has been paid in one year for the purchase of lime as manure; and the growth of barley in 1804 was upon near 300 acres, and a full crop: a large quantity of this is now in hand in the stack, but will soon come to a good market, being contracted for at 9*s*. per bushel of nine gallons and a half; 2000 bushels to be delivered in September next; which the thrashing-mill can get out in ten days. With barley is always sown plenty of the usual seeds, red and white clover, trefoil and ray-grass; and it is intended in future to confine the cultivation generally within less compass; about 100 acres of turnips, and the same breadth of barley and grass seeds each year. The turnips of the present year are extremely promising for a full crop.

The usual course of crops, 1. wheat; 2. turnips; 3. barley; 4. seeds. Sometimes, 1. pease; 2. wheat; 3. turnips; 4. barley; 5. seeds; or sometimes, where the land is supposed weaker, 1. pease; 2. turnips; 3. barley; 4. seeds. Manure laid on for the turnip, lime, or farm-yard dung. The barley and wheat of the present year are full crops. A considerable breadth of pease and vetches good; the crops are now cutting, August 27th, 1805. Season about a fortnight later than average.

The soil is generally a sandy or gravelly loam, composed of pebbles, in sand and gravel, beneath a thin stratum of vegetable loam, which are all mixed together by the operation of the plough. The original spontaneous produce chiefly heath and furze; the site of the upland generally varied and uneven; the knobs or brows of banks generally poor and thin of soil; many of these are very properly reserved for clumps and plantation.

Single-furrow wheel ploughs were till lately used, but the Norfolk plough has been introduced and is now in use; though I did not hear of any striking or decisive advantage thereby gained. Cook's drill-machine has been much used both for wheat and barley, putting in two bushels of seed per acre, which is a saving of one bushel of barley per acre, three being sown broad-cast. When barley is drilled, the ground is harrowed previous to sowing grass seeds, and with light harrows after, and then rolled. No hoeing in this case; but the clover lay wheat, and the uneven barley ground, are often sown broad-cast, the drill-machine in these cases not working so completely. Turnips have been sown by Cook's drill, at both nine and twelve inches distance, with success. The turnip preparation and crop are most attended to for cleaning the land. Both horse-hoeing and hand-hoeing have been used, as well as hand-weeding; the most prevalent weeds in the present turnip crops being corn lakeweed *(polygonum persicaria)* corn spurry *(spergula arvensis)* and chickweed.

The carting, ploughing, and team work, is at present entirely done by horses, of which about thirty are kept for draught, including the drawing of fuel, building materials, &c. which are sometimes considerable. Some time back seventeen oxen were kept for draught, and the reason assigned for the change is, the land being stony and uneven, and on those accounts inconvenient to cultivate with oxen.

Grass Land.—The quantity of this is very considerable, and consists of water meadows on the Trent and Sow rivers, subject to inundation; grass land that can be watered at pleasure by the mill-stream, after passing through the farm-yard; and upland pasture out of the reach of water. This last is occasionally refreshed by top-dressing with dung or compost.

The meadows on the rivers are subject to occasional damage from summer floods, whereby the hay may be fouled, spoiled, or carried away; but this does not often occur: the last inundation was in May last, which continued several days, and left the ground slimy, and apparently chilled and starved, but it soon recovered, and the grass ran to a great crop. The hay harvest of the present year, 1805, has been upon a very large scale, and from the showery season, got together with great difficulty. Near 250 acres having been mown for hay, eleven very large stacks are made from it, besides which there is a very large quantity of old hay in hand. I estimate one of the old stacks to contain more than 100 tons of hay; and believe Mr. Anson to have the largest stock of hay of any individual in the county, or whose premises I have ever seen.

This great farming concern is managed, under the direction of Mr. Wheelock, the farming steward, by 22 labourers and two men servants, and one man manages the mill and malt-house. The labourers have ten shillings per week each, the year round, and a good allowance of beer, with ale in harvest, and now and then a gratuitous dinner; but the last optional to their employer; and all the regular work is lett by the piece. I suppose additional hands are employed occasionally in harvest, and in improvements; as a great deal of under-draining has been done: the drains are filled up with rock stone, heath, and earth, after boring different places in their bottom.

Live Stock.—The cow stock are of the very best long-horn sort, closely bred from the famous Rollwright breed. Some years ago Mr. Coke of Norfolk, took annually of that breed from Mr. Fowler, a certain number of young calves for rearing, at ten guineas each. Mr. Coke afterwards preferring the Devon breed, disposed of his stock of long horns to Mr. Anson, who has now many excellent cattle of this breed: 60 guineas has been offered for a heifer, and almost any sum asked, would be given for some of the cows by the curious breeders. Here are two bulls of this breed, whose symmetry and handling are highly perfect.

The number of dairy cows is generally about 30, from which thick cheese is made, one each day; but a portion of milk is daily given away to the neighbouring poor. A number of young cattle are annually reared for succession stock, which, with feeding cattle, makes the number wintered, generally exceed 100 head. The last season upwards of 60 head of cattle were stall-fed, entirely on the produce of the farm (having stall room for so many at once); they were all finished up at the same time, and the greater part sent to Smithfield.

Sheep.—The flock of sheep is very considerable, amounting at present to near 1700. Mr. Anson has fixed upon the South Down breed, which are now the staple of the flock: about 600 ewes are put to ten rams. Some of the South Down ewes have great symmetry of form, and at the last show of live stock by the Staffordshire Agriculture Society, at Lichfield, July 30, 1805, Mr. Anson obtained for the best short-wool two-shear ram, the gold medal; and for the best short-wool ewe, the gold medal. These ewes, I was informed by Mr. Wheelock, will fat, when full grown, to 18lb. the quarter, and the wethers at two year old to twenty or more. Their produce of wool as follows: yearling hoggets not having been shorn as lambs, 4 lb. average fleece; ewes ditto, $3\frac{1}{2}$ lb. average; and some of the ram fleeces 6 lb. each.

Mr. Wheelock informed me, that he has sold the wool at 2*s.* 6*d.* per pound this season; that he sells annually to the butcher 500 sheep, besides what are slaughtered for domestic use; but to enable him to do this, a lot of wethers are bought in annually for turnips.

He also informed me, that a few years back, upon his first taking the charge of this farm, a very great loss was sustained in the flock from the rot, owing to negligence in his predecessor, in suffering the sheep to depasture too much in winter upon the meadows subject to inundation; but that since, by more effectually draining those meadows, and by caution in the time of their depasturing thereon, no inconvenience of this kind has occurred. The sheep intended for fatting are now depastured here previous to being taken to turnips.

The land that can be watered at pleasure, is forced to an early spring grass, and reserved for ewes and lambs; the unsound parts having been well drained, no inconvenience has been found, or is apprehended from this practice.

Green Crops.—In addition to the turnips, a bog has been drained, situate in the valley, whence arises the stream that works the thrashing and corn mills (consisting of a few acres): this has been worked by hand, and planted with potatoes and ox cabbages; the crops very good in places, but not regular, owing to the sudden drying and fermentation of the peat in some places; it is intended to repeat the crops till a complete pulverization is effected, and then to lay down with grass seeds for a water meadow.

Upon some odd patches of land, and in the young plantations, after digging or hoeing between the young trees, shrubs or plants, buck-wheat is sown: this is intended to encourage the growth of partridges and pheasants; the latter are not thoroughly naturalized here, but it is intended to increase the stock, and by setting the buck-wheat in shocks in the plantations, it is expected to fascinate their stay on the grounds, and to effect their naturalization.

Canal Carriage.—This estate is skirted to the north and west by canal navigations; the Trent and Mersey canal passing along the Vale of Trent, and the Staffordshire and Worcestershire canal, along the valley of the Penk and Sow; their junction is effected near this place: they are conducted on the sides of the natural rivers most distant from the demesne, and so as to be no nuisance or inconvenience to the premises. By these canals, fuel, or lime for manure, in any quantity, may be had at all times; and they are at hand to convey farming produce to the best market.

CHAP. IX.

GARDENS AND ORCHARDS.

THE culture of the kitchen garden may be considered as a branch of agriculture; but further than this, gardening is not, I think, connected with the farmer's business; every considerable farm has, or should have a kitchen garden, of half an acre or more, and every labourer's tenement, cottage, and country house of every description, should have sufficient garden ground; for this, well cultivated, will produce more sustenance for mankind, than in any common system of agriculture; and therefore is, on that account, a political and public advantage. The garden plants here cultivated are, I suppose, the same as in all other parts of the island: cabbages, potatoes, common and French beans, and pease, are the principal garden vegetables, and perhaps the most advantageous. Turnips, carrots, onions, and pot-herbs, are grown on a smaller scale; savoys, and some of the hardier greens, as well as beets and spinach, as they will stand the severity of our common winters, are ready for early spring use, and should therefore not be omitted; these are the staple articles of the kitchen garden; with which, as well as the less important ones not here named, almost every one is acquainted. Fruit trees may be planted in the hedgerows and corners, and a kitchen garden should be surrounded with a good fence, as well to protect it from trespass as to break off the cold north and east winds, and thus secure its early and tender productions from injury.

I think every labourer's tenement should have a garden of at least half an acre, which well and systematically cultivated, might much assist a family in supplying many necessaries and comforts of life, which they must otherwise go without. Suppose this half acre thrown into two equal lots, the one for garden vegetables, the other for wheat alternately; let the garden lot be again divided in two, the one half for potatoes, the other half for cabbages, pease, beans, and other useful vegetables*. The whole might be cultivated with the spade and hoe, without loss of time; as the digging of a very little every day, morning or evening, would keep the business within compass, and in the hoeing and weeding, the wife and children might assist.

In this system there would be one eighth of an acre of potatoes, which might produce from forty to fifty bushels; one quarter of an acre of wheat, which drilled and hoed by hand might produce eight bushels; an hog might be kept from May to Christmas, through the summer on the refuse of the garden, and wash, and fatted after harvest on boiled potatoes, bran from wheat, and gleaned barley; the straw of the wheat crop would furnish the hog with litter, and both together with dung for the garden; the produce of wheat in addition to gleanings, might be a great resource for the labourer and his family through the winter, and with the hog, a help for the year. I wish gentlemen of landed property would put these comforts in the power of the industrious labourer, by letting them sufficient land upon reasonable terms, as well as by some reward* or encouragement to those who managed in the best style, and with the least loss of time.

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* The hedge-rows and corners, should be planted with useful fruit trees; those sorts of apples and pears which are capable of being kept for a length of time, would in pies be a cheap and wholesome food for children, and from such sorts would continue during a great part of the year, and might at times turn to better account for sale; and who could better attend to their keeping, than people in this class of life, little hurried by other avocations, and to whom such articles would be a treasure?

At some intervals perhaps it might be advantageous to sow the one half with hemp; in which case the wheat stubble, ridged up with the spade to lay through the winter, would on digging down in the spring be in excellent order for hemp; the wheat-growing must then be omitted for one year. Hemp is very often grown in this way in Staffordshire in small yards belonging to tenements, furnishing employ for the wife and children of a family, in spinning and winding; as well as linen for the convenience and comfort of the whole family; and any part of the produce that can be spared, will find ready purchasers.

Orchards.—The orchards of Staffordshire are inconsiderable; little or no cyder or perry is made, and upon the whole, I believe the produce of the county is insufficient for its own consumption even at table; this ought doubtless to be censured as a neglect; as many soils and situations are unquestionably well adapted for fruit of any kind: the farms and other country houses have generally fruit trees for their own consumption; but not sufficient to supply the markets, which are principally furnished from Worcestershire. An extraordinary circumstance I have been told from good authority, which is, that upon a hit of fruit in Worcestershire, two thousand pounds have been paid in one season for tonnage of apples upon the Staffordshire canal, in their way to Lancashire: the tonnage demanded is about 5*s*. 6*d*. per ton; whence the quantity conveyed must have been near 8000 tons. The parish of Over Areley, in this county, which adjoins Worcestershire, has formerly been famous for fruit, especially apples; but the orchards have been suffered to decline, though some recent attempts have been making towards reinstating them, and the soil and aspect are doubtless well adapted for the purpose. The parish I live in (Tettenhall), has one singular circumstance in the fruit way; it has produced a peculiar kind of pear, called Tettenhall pear, and known by no other name; many hundreds of the trees grow in this parish, though not, or scarcely to be found at all, at any considerable distance; the tree is large, and a plentiful bearer, the fruit well flavoured, and bakes and boils well; but will not keep long enough even for carriage to any considerable distance, unless some time before they are ripe; the average annual produce of this parish is many thousand bushels more than its own consumption; the whole duration of the pear from its becoming fit for use to its decay, about one month, during which time all the neighbouring markets are so plentifully supplied, that they often scarcely pay for picking and carrying in. This pear makes but an indifferent perry, and is therefore not much applied that way: in plentiful seasons, and it is seldom otherwise, large quantities are eaten by hogs, which are suffered to pick them as they fall. Upon the whole, although a plentiful production of fruit would supply an agreeable and wholesome article for the table, either in its natural state or baked in pies, as well as an excellent beverage; yet I do not by any means consider it as so certain, or staple an article as grain, and believe it would be some time before a Staffordshire farmer would be induced to pay much attention to fruit; they are even sometimes jealous of a hit in Worcestershire, as conceiving a large production of cyder and perry would affect the price of their greater favourite, barley; this, however, I believe, has seldom happened, the consumption of barley in such seasons being nearly the same as at other times. Respecting the management of fruit trees, nothing is done here, but occasionally pruning, or lopping out a few of the branches when they become too thick. After all, I shall conclude this article with observing, that the planting of fruit trees has been too much neglected; and that the raising of orchards in this county may be ranked amongst its agricultural improvements, as producing an useful article little interfering with its present productions. In such a business it will naturally occur, that due attention should be paid to proper and valuable kinds of fruit; and perhaps none are more valuable than those which produce cyder and perry of the best quality. Fruit trees might certainly be raised in pasture land, either in the fences or elsewhere, with very little injury to the present produce of such land, and perhaps the increase of human beverage from fruits, and the decrease of it from grain, is a change of circumstances much to be desired, as tending to increase the quantity of grain for food, and being perhaps more conducive to health than fermented liquors from grain; in which case, such change would conduce to health, as well as plenty amongst mankind. But the raising of fruit trees must be set forward and promoted by the land-owner; not being exactly the tenant's business, or consistent with the uncertain tenure by which farms are commonly held in occupation.

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* What pleasure might be derived by the affluent landlord (who would bestow so much attention to rural affairs, as to give annually a store hog to the occupier in these circumstances, who managed his occupation in the neatest and most productive way), from thus contributing towards the comforts of a useful class of mankind, and the improvement of that part of his estate, which might be effected by the spirit of emulation thus raised.

Since drawing up the preceding remarks on the subject of increasing our plantations of fruit trees, I have had conversations on the subject, with persons well qualified to judge; from which Iam thoroughly persuaded of the great utility of extending our orchards, and increasing the quantity of human beverage from fruit, even at the expense of decreasing that from grain. Large tracts of this county are well adapted for the growth of fruit; deep rich friable loams are the natural soils for the best cyder apples and pears, for the production of perry; and on lighter soils they will well succeed, especially if a good cart-load of marl be dug into the earth, and incorporated with the soil previous to the planting of each tree: in the hedgerows of pasture land they would, I think, do no kind of injury; and even planted at proper distances in grazing fields, they would little interfere either with the production or consumption of the pasture herbage; and even in arable lands, a fruit tree I conceive to be less injurious than any of the kinds of timber trees. The breadth of land now appropriated to the growth of barley, is prodigious; it appears from authentic information, that the annual growth of barley, in acres, is equal to two-thirds of that of wheat: could the use of beverage from fruit be gradually introduced, so as to lessen the consumption of barley one-half, the annual growth of wheat might be increased, by one-third additional breadth of land. I suppose this idea of lessening the consumption of barley, would alarm the financier in his revenue calculations; but surely an equivalent might be found, in some other article of consumption; at all events, the plentiful production of that necessary article, bread, ought to be the leading point, and not to give way to any sort of speculation: the increase of fruit would add to the comforts and supply of the poor, in many other ways; an apple boiled or baked in the paste of flour, is not only a delicious and comfortable, but an wholesome and nourishing repast for children, and much of their nourishment might be derived from fruit in various ways: I think the planting of fruit trees is a proper subject for encouragement by premium, and hope it will be seen in that light by our public and patriotic societies; but the greatest attention should be paid to counties where fruit trees are but little introduced, for where their value is already well known by experience, they will maintain their ground, should their number ever so much increase, as to lessen the demand for barley. Wheat would be grown with great advantage after turnips; particularly after such as are early eaten on the ground; and this is the best possible preparation for wheat on light land; the early fallowing of the gronnd for turnips, and hoeing the crop, perfectly cleaning it, and the dung, urine, and treading of sheep and young cattle, giving it fertility and staple.

CHAP. X.

TIMBER, PLANTATIONS, AND WOODLANDS.

THE county of Stafford still continues well stocked with all kinds of timber, notwithstanding the immense quantities that have been cut down of late years. Amongst the many well-timbered estates in the county, the following have been seen, and some of them particularly examined, by the Writer of this Report. Many well-timbered estates have undoubtedly been overlooked and are omitted; but the account of those which follow is sufficient to shew, that some attention has been, and is still, paid to this article by many gentlemen of distinction and property.

The first and best timbered estate, is that of Lord Bagot, in the neighbourhood of Abbot's-Bromley. The woods extend over many hundred acres, and almost wholly consist of oak, the ripest, finest and best that I ever saw; and I believe I run no risk of exceeding the bounds of truth, if I say the best in the kingdom. A very large quantity of oak in these woods is now quite ripe, and some even decaying. Many of the oaks carry timber to the length of sixty and seventy feet; and in Lord Bagot's park are many hundreds of very extraordinary bulk, containing from 200 to 460 feet of timber each. I could pick out many worth sixty guineas a-piece, and some even more. Some of this timber is of considerable antiquity, and mentioned by Dr. Plott, as full grown timber in 1686.

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I was informed upon the spot, that for these woods 100,000*l.* have been offered, and that his Lordship has half as much timber in Denbighshire. Total value of timber, 150,000*l.* which in the three per cents. at the present price, would purchase an income for ever, of more than 6000 guineas per annum. The succession woods and young plantations are very considerable, and still continuing; and as Mr. Harvey, his Lordship's steward, very judiciously observes, upon land not worth a rent of 10*s.* per acre, paying better, underwood included, than in any other way; and it is upon a poor cold land of this description, that the above fine timber chiefly abounds, the soil being a moist gravelly loam, upon a clay or marl bottom. The young plantations are made sometimes by sowing acorns with wheat, after summer-fallow; and sometimes by planting out young plants of oak, and other wood; in which case, at the end of one or two years, when such plants have taken well to the ground, they are cut off at the surface, and the second shoot trusted to for the tree; this second shoot thriving with much more luxuriance and vigour than the first, checked by transplanting. Also after cutting down a wood, the replanting is sometimes effected by striking in with the pick-axe a sufficient number of acorns and other seeds of forest trees or underwood; and all these methods have been attended with success. The young plantations are well fenced, and carefully guarded from trespass by a woodman appointed for that purpose.

The second timbered estate, in my opinion, is Chillington, the property of Thomas Giffard, Esq. whose hospitable and benevolent ancestry and family have resided here for many centuries. From this estate has been sold within twenty years, timber* to the amount of 30,000*l.* and the timber remaining on the estate is worth at least an equal sum. The succession woods and young plantations are here very extensive, and of luxuriant and vigorous growth. Some very fine ripe oaks grow on the side of a gravel road, near the Pool, a large and beautiful piece of water. In the modern plantations, oak has been particularly attended to: but there are many other varieties of timber trees extremely promising in growth. The young plantations are well fenced, and secured from trespass, without which precaution planting would be in vain. This branch of agriculture, for I can call it by no other name, is peculiarly the province of the gentleman; to whom I should conceive nothing can give a greater or more rational pleasure, than viewing the progress to maturity of these, as it were, the work of his own hands, whilst, at the same time, they improve his estate, and shelter and ornament the country.

The demesne and neighbourhood of Beaudesert, the magnificent seat of the Earl of Uxbridge, is well stocked with fine ripe oak timber; the woods on this estate are of considerable extent; its situation is upon a very elevated ground on the north point of Cannock-forest or chase, the most extensive waste in the county; said to have been formerly covered with timber. Some of the woods on this chase have been latterly cut down, but not before they were fully ripe, and a large quantity is remaining upon this estate. The prospect from Beaudesert commands a very extensive range over Needwood-forest, into the cultivated parts of Derbyshire, as well as into the Peak hills, and the Moorlands of Staffordshire.

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* Falls of timber have been since made upon this estate, but the growth of the succession wood, more than supplies the place, and keeps up the value.

Upon the pleasure-grounds and estates of Lord Dudley, at and near Himley, are large quantities of well grown timber; and very extensive woods and coppices of oak, large quantities of which are ripe, and fit for any use. These woods are beautifully intersected with pleasure roads, cut through them in various directions, and well stocked with pheasants.

The ancient and noble fortification and seat of Dudley castle, in the neighbourhood, situate on a mountain of limestone (but now in ruins), is a curious and interesting piece of antiquity; his Lordship's present seat at Himley (situated at a proper distance from the smoke of the mines) is a noble and elegant structure; the park extensive, variously disposed by Nature, well wooded, and stocked with deer; the pleasure-grounds have been laid out by Brown in the first style of magnificence, with artificial pieces of water, plantations, and the other usual accompaniments.

Teddesley-park, Sir Edward Littleton's. The house at Teddesley is a commodious, modern-built, elegant mansion, commanding an extensive view of a well cultivated country, to the west, and of the hills and extensive waste of Cannock-heath, to the east. The timber and plantations on this estate are very considerable. Manstey wood is an extensive coppice of fine ripe oak timber; besides which there are many other coppices, dingles, and clumps, of full grown oak, ash, and other timber. The spring coppices and young plantations of different growths, as by information from Mr. Hall, the steward, cover at least 100 acres; and in them the oak has been an object of particular attention. It is further to be observed, that these plantations are generally upon poor cold land, on a gravelly, marl, or clay bottom, on which the oak will succeed well; and which sort of land being of no great value for corn or pasture, is very properly applied to the growth of timber and underwood.

Wrottesley estate, the property of Sir John Wrottesley, Bart. contains some considerable woods of ripe, well-grown timber; also extensive plantations of more modern growth. At Enville (Lord Stamford's), the woods and plahtations within the circumference of the pleasure-grounds are very extensive, and extremely well stocked with timber trees, and underwood of every sort; amongst which the oak predominates in great profusion, kindly, and of vigorous growth. The woods of Upper Areley are very extensive, and well stocked with oak of various ages, from large timber trees to saplings. Hagley-park is out of the county, but close to the borders, adjoining the parish of Clent. I shall just observe, that it contains large quantities of exceeding fine ripe timber, of the better sorts, and of a first rate quality. Some of the oaks are of great length and dimensions, and fit for any use to which oak is applicable. The parish of Harbourne is well wooded. The Bishop's woods in the neighbourhood of Eccleshall are very extensive, and said to contain 1300 acres: they are managed on a system, the exact particulars of which I could not learn; but understand that a portion is cut down every year, and when the 1300 acres have been successively taken, that which was cut first, is ready for cutting in a second rotation. A regular annual revenue is thus drawn from the woods without injury. Madeley woods, near Newcastle, well stocked with oaks of different ages, were formerly a park, but "Ceres has re-assumed the land," and the breaks and lawns between the woods are enclosed, and in the usual course of arable cultivation.

The plantations at Fisherwick (Lord Donegal's) are of little more than twenty years growth; but very promising. Brown, who projected these plantations, assured the proprietor, as I have been told, that he had planted for him 100,000 trees, and in a certain number of years, which he then mentioned, those trees would be worth 100,000*l*. Some of the oaks are even now worth fifteen shillings each; and they abound in profusion amongst firs and other sorts by which they are sheltered, and encouraged in growth. I observed some large ripe oaks in the park; and in the pleasure-grounds an ash, which I believe contains at least 400 feet of timber.

Sandwell-park and estate (the Earl of Dartmouth's), is well stocked with all sorts of timber, particularly oak; and the Patteshall estate, belonging to Sir George Pigot, still contains large portions of ripe timber, although considerable quantities have been cut away of late years; this estate of Patteshall too, has one of the most elegant parks and seats in the county, or in this part of the kingdom. The park contains abundance of wild turkies.

Broughton pleasure-grounds, or paddock (Sir Thomas Broughton's), abounds with plantations, clumps, and shady spreading trees, particularly sycamores. On the other side of the road is a fine promising spring coppice of oak; the gradual thinning of which, by cutting out underlings, should be attended to.

Hilton-park, belonging to Mr. Vernon, contains plenty of flourishing oaks; and in the pleasure-grounds are some very fine ripe well-grown trees of this species, the pride of the forest: and a great variety of other timber trees grow there in the utmost luxuriance. The rides and plantations are very extensive, and furnished in the most innumerable profusion, with evidence of the planter's vigilant attention. Mr. Vernon was a very early planter, and now, in the prime of life, has the pleasure of seeing some of his first efforts in this way fast approaching towards maturity. Many of the larches, and Scotch, as well as other firs, of his planting, contain twenty feet or more timber, and are now in a very growing state.

Burntwood, near Ashley-common, belonging to Mr. Meynell, seems well stocked with young plants of oak, and is very extensive.

The estates of Mr. Gough at Perry Bar, Oldfallings, near Bushbury, and Walton Grange, near Gnoshall, are all well timbered. Perry-park and neighbourhood has a good deal of ripe timber; considerable young plantations and trees of every progressive stage of growth. Oldfallings estate and neighbourhood is plentifully stocked with well-grown oak and other sorts of timber, and Walton Grange has an excellent oak coppice of considerable extent. Bentley estate, near Walsall, is extremely full of oak, both in coppices and hedge-rows; the proprietor is Mr. Anson. At Great Sugnall, near Stafford, Mr. Turton's, I observed some small neat plantations, amongst which oak has not been forgotten. As this valuable tree succeeds well amongst others by which it is sheltered and encouraged in growth, but is liable to be over-topped by many others, which, more luxuriant, prevent its leading shoots from penetrating through their foliage;

such obstructions should annually be cut away, and the growth of oak encouraged as superior to all others, both in majestic beauty and national consequence. I observed this attention neglected in some of these plantations. Considerable woods and plantations grow on the Shuckborough estate (Mr. Anson's), as well as on that of Sir William Wolseley; and also upon Lord Curzon's, near Rudgeley. The estate of Mr. Fowler in this neighbourhood at Pendeford, is well wooded, both in hedge-rows, young plantations, single trees, and clumps of very fine well-grown oak: it has also a very promising coppice of oak. Other smaller estates in this neighbourhood are well stocked with timber, particularly that of Mr Fleeming, at the Wergs near Tettenhall, where, amongst a number of well-grown trees of various species, I could pick out a few oaks worth thirty guineas a-piece. Upon the whole, the county is well timbered, and has now in it succession growths sufficient for the supply of a great length of time; and I have no doubt but the public spirit of the times will secure that supply to future ages.

I have two more observations to make upon planting: the one relating to the proper site of ground and situation of plantations, whether intended for ornament or profit; the other on the timber best adapted to fulfil those objects, and at the same time to answer the purposes of pleasure and profit to the planter, and of utility to the public.

With regard to the proper ground for plantations, every gentleman or land proprietor of prudence and taste, who resides on his property, will furnish himself with a shady retreat from the burning sun, that shall afford at the same time a shelter from the storms of winter. For this purpose he will keep up a sufficient shade near his habitation, in that situation which local circumstances shall direct. Large plantations or coppices for profit should not be make on good land; always of much more value for corn or pasturage; but either on moist land of small value, upon a clay or marl bottom, where timber often grows well; or rather, where such land abounds, upon precipices, and sides of hills impracticable to the plough; and where it often happens the land unplanted is of little or no value*. I have often observed, that timber succeeds

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* Plantations upon this system have been made to a great extent, and with uncommon success, in different parts of the steep Moorland hills, particularly those of Dillorn, Kingsley, and Oakamoor; the Dillorn woods alone form a chain of three or four miles in length, and consist of tall straight oaks and ash, in general so well filled up with underwood, as to be cut in gradual falls at seven years' growth, and produce, when well fenced, six pounds per acre; for rods and staves, used for crates in the pottery. To illustrate this more clearly; eighty-four acres of wood will admit of twelve acres being cut annually, and will produce seventy-two pounds, which is about seventeen shillings per acre, per annum, for the underwood, exclusive of the timber. The bleak neighbouring hills which remain unplanted cannot be worth three shillings per acre.

The above communicated by the Rev. S. Shaw, but signed J. H. which I believe to be John Holliday, Esq. To that gentleman the public are much indebted, for proving by experiment, the great advantage of planting barren impracticable precipices; large tracts of which still remain in the north of Staffordshire, naked and useless, not worth in their present state (I think), one shilling per acre.—*W. P.*

" Planting, I will readily own, is my favourite and principal amusement in the country; yet it by no means shuts out other improvements; the cultivation and improvement of commons or waste land, have engaged my attention several years; and I have the pleasure to add, that by means of ploughing deep, burying the goss or furze, the principal produce of these Moorland hills, and cross-ploughing the following year, to kill more effectually the roots and fibres. A few years ago I lett to a tenant, succeeds particularly well in such situations; and the making plantations there is attended with many advantages. 1. The roots of trees twining and interweaving with the soil, prevent it being washed by torrents into the vallies, which is the cause why many such situations are now bare and almost void of soil. 2. The falling and putrefaction of leaves tend to thicken such soil, and render it by degrees richer, and more capable of forcing the growth of timber. 3. Such land is often of little value, and incapable of being improved in any other way. And I cannot refrain upon every occasion, from calling particularly upon all public and patriotic societies, to confine their premiums for planting, to land of small value, or impracticable to the plough. The corner of fields, where four unite, are not improper places for small clumps in any land: and in hedge-rows a few oaks, elm, or beech, are a great ornament, without doing an injury: but ash, always very injurious to arable and pasture land, should by no means be planted in hedges, but reserved for clumps and coppices.

Respecting the sorts of wood, oak is undoubtedly the first forest tree, but being slow of growth, the planter can seldom expect personally to reap the reward of his labour: it should, however, be always plentifully intermixed with other sorts, where it will be ready

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tenant, Mr. James Dunn, two acres of the new improved land, meliorated with a good white coat of lime, at the rent of fifteen shillings per acre, which, in its pristine state, was not worth two shillings and sixpence per acre. It was very pleasurable to me, in the succeeding year, after the tenant had reaped a heavy crop of fine oats, to receive his application for some additional acres of the common, at fifteen shillings per acre, &c."—*P. S. To Mr. Holliday's letter, in Transactions of Arts, &c.* vol. x. p. 21.

ready to supply their place, and fill up the ground when its inferior neighbours shall be cut away. I think, without a mixture of oak no plantation can be approved.

Ash is an extremely useful and valuable wood for many purposes, but not very quick of growth; requiring from fifty or sixty to eighty years, to arrive at tolerable maturity. Elm, the common or narrow-leaved, is very proper for hedge-rows and plantations; it makes a large tree, in about the same time as ash. I have had some well-attested instances of very fine large elms having grown up in the life of a person, who remembered them planted. We have now in this parish, a fine square grove of elm upon Tettenhall-green, of about seventy years growth: the trees contain seventy or eighty feet of timber each. The witch elm has been known in several instances to grow amzingly quick: my father was present at the planting of one in the paddock here at Pendeford, which being cut down at the end of thirty years, contained sixty feet of timber, and was sold at one shilling per foot; and I observed a most rapid growth in some upon this farm: the wood is of a good value; and this sort is equal to most in quick return to the planter. Respecting the fir tribe, planters have certainly been rather too partial here, though many of them are of rapid growth. The larch, or Scotch, and other firs, will often measure as many feet of timber as they number years of growth, or even more. I cannot but strongly wish, however, that every gentleman making a plantation of firs, would intermix at least an equal number of English forest trees, and not forget oak. As such plantation proceeds in growth, the trees least profitable may be cut away. Beech and sycamore are useful, and of tolerable quick growth;

and are therefore a proper mixture with other wood. Many instances may be produced of the rapid growth of poplar, and the same individual has been known to plant and cut down poplars containing from sixty to eighty feet of timber each: and I remember the planting of some myself rather more than thirty years since, some of which now contain more than thirty feet of timber; the sort, the black poplar (*populus nigra*). This sort succeeds best on a moist soil, or by a brook side. The trees of this sort are apt in some seasons to die in great numbers, even when large trees. The white poplar, or abele* (*populus alba*), makes a fine large tree, and will succeed on almost any soil. I have seen very large ones on the top of a high bank, and was shewn some in the plantations at Chillington lately, of about twenty years growth. They are upwards of thirty feet high, and would measure four feet round at the bottom. The Lombardy poplar, so highly extolled some years back, is a mere weed in comparison of our own native trees before named, and little superior to the aspen, the worst of the species. The Lombardy poplar in this country is a pole rather beautiful to the eye, but of no promise as a timber tree. The wood of the poplar in general makes very good flooring-boards and packing-cases. Some of the willow species are remarkable for quick growth; and the loppings in the hop countries are useful for poles. Amongst plantations, perhaps that of fruit trees has been too much neglected; and the raising of orchards in this country may be ranked with its agricultural improvements, as producing an useful article, little interfering with its present productions.

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* The true abele is a different species; branching out more, and growing faster, than the common English white poplar.—*S.*

I have not yet been able to discriminate two species, or to distinguish the difference.—*W. P.*

In the foregoing account of woods and plantations, it is very possible that many considerable ones may have been omitted, as not coming under the Writer's observation.

CHAP. XI.

WASTE AND UNIMPROVED LANDS.

THE waste and unimproved lands of this county are very considerable, and certainly in the present state of population, their cultivation and improvement is very much a national object. The most extensive wastes or uncultivated spots in the county are, Needwood-forest, Cannock-heath, and Sutton Coldfield; besides a great number of commons of less extent, and some considerable tracts in the Moorlands and elsewhere, appropriated and enclosed, but not yet fully improved*.

Needwood-forest is a most interesting spot. Here near ten thousand acres of one of the finest soils of the kingdom lie in a state of nature, wild and romantic! beautiful in the eye of the fox-hunter and the sportsman. But, considering the state of population, and consumption of landed produce, its continuance in its present state is certainly indefensible upon any sound principles of general policy. Here the warblers of the wood chant forth their mellifluent notes, and the herds of deer range at will over the plain, or through the thicket. The fox and the badger burrow on the declivity of the deep glen, the rabbit on the sandy hill, and the hare hides itself in the thicket. The woodcock, the snipe, the pheasant, and the partridge, abound in profusion; but all often disturbed by their tyrant master, man. The natural disposition of this extensive forest comprehends a great and beautiful variety of aspect. Gradual eminences and easy vales, with meandering rills, and now and then a bolder and more abrupt swell, form the general feature of the forest: a fit subject for any degree of improvement by human art and industry. In the northern part, particularly within Marchington-woodlands, the aspect is bolder. Here the forest is composed of deep glens, surrounded by abrupt precipices, impracticable to the plough, but happily well clothed with wood; amongst which the stout native oak, young, luxuriant, and of vigorous growth, is in great abundance. On a level with the summit of these precipices is a broad upland surface, capable of being converted to corn or pasture land of a first-rate quality.

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* Above 3000 acres of Morredge, Ipstones, and Dillorn wastes have lately been enclosed, and great part improved.—*S.*

The swells or hills of this forest are very generally composed of immense beds of red or white marl, the colour sometimes changing suddenly, so that in a small distance they are as distinct as can be conceived. This marl, of a friable mouldering texture, continues from the very surface to many yards in depth. In some of the enclosed land adjoining, particularly Agardley-park farm, it is the same, and both colours have been used promiscuously for marling land, with equal good effect; and very probably the white may contain the greater portion of calcareous earth*. The white loamy surface is also equally productive of corn or pasture with the red, and equally esteemed by the farmer. This white* marl I had never observed before.

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* Staffordshire marl contains from one-fifth to one-thirtieth proportion of calcareous earth.—*S.*

This forest is stocked with deer, horned cattle, and horses; but no sheep are suffered to feed on it. The supposed stock may be, about 3000 deer, and 3000 of all the other kinds in summer; but much fewer in winter. The keeping of the 3000 horses and horned cattle, charged at 12*s*. per head for the summering, amounts to 1800*l*. or about 4*s*. per acre, upon the whole extent of the forest; and this sum of 4*s*. per acre is all the advantage that a neighbouring very intelligent farmer supposes the public derive from this tract; the deer not being managed in any system for the public advantage, or for the supply of subsistence and employment of the bulk of mankind. I shall add for them to the above account, 1*s*. per acre, and 5*s*. per acre as the total value of the forest to the public in its present state. I estimate the capital employed in stocking the forest at 5*l*. per head upon 3000 in number, or 15,000*l*. Although these, not being constantly kept there, cannot wholly be called forest stock, yet I will suppose that which ought to be taken off on this account, to be made good by advantages arising from the deer. The capital employed in stocking the forest will then amount to 15,000*l*. or about 1*l*, 12*s*. 6*d*. per acre, and its value to the public in its present state, as land, about 2300*l*. per annum.

The extent of the forest, by an ancient survey alluded to by the Commissioners of Crown Lands in their last examination of it, is 9220 acres: of this, in case of enclosure, I will suppose 1000 acres ought to be reserved for woodland. This may be done about the glens and impracticable spots, and in other places where thriving oaks are the most promising: there they ought to be fenced off, and reserved in clumps and coppices, which would be both an ornament to the country, and a nursery for stout oak timber. 220 acres I will suppose occupied by the lodges, and other small enclosures. This is already in an improved state; 8000 acres will then remain for improvement. The moment that these shall have been enclosed, and buildings for occupation erected on them, they will be worth, for a term, as many guineas per annum, and would be improved to a higher value. The amount of capital employed in such improvement, in buildings, enclosure, crops, stock, &c. might, on this rich land, be 20*l.* per acre. Deduct the present capital, 1*l.* 12*s.* 6*d.* per acre; remains increase, 18*l.* 7*s.* 6*d.* per acre; which, upon 8000 acres, adds 147,000*l.* to the national capital. By improving this tract, the increased annual product would probably be 5*l.* per acre, or 40,000*l.* per annum.

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* Most of the white is the weakest, as it generally contains a larger proportion of sand and catbrain.—*S.*

The white marl on Needwood-forest is, apparently to the eye, equally pure with the red.—*W. P.*

The nature of the soil of this tract is, in general, a red or white marly loam, more or less tenacious; but seldom approaching to the harshness of clay. Many considerable spots are light enough for turnips. I estimate 1000 acres in the 8000 to be of this quality: this, in case of a division or enclosure, should be thrown into allotments, and divided in equal proportions of so much to every 100 acres, and laid with the strong land, which would enable every occupier to provide himself with a portion of turnips, for winter food for his sheep; in comparison of which convenience, a trifling inconvenience, in point of distance, would be no object. The land would afterwards be sown with barley.

In every enclosure, the rills and vales should also be particularly attended to, and the boundary of such vales traced out by a spirit-level, stretching in breadth as they proceed downwards; and the ditches separating them from the upland being upon a level, should be constructed to answer the purpose of floating gutters for irrigation; and where large quantities of flood water usually pass off, reservoirs should be constructed, to collect and retain such water for irrigation at pleasure; by which means, large tracts of the sloping sides of vales may be converted into water-meadows: the quantity of such upon this forest is not very considerable, the vales being generally narrow, and the slopes abrupt; it is, however, sufficient to be an object deserving particular attention.

This forest, in an improved state, might be rendered one of the most delightful spots in the kingdom, its form and aspect comprehending such a great and beautiful variety: and the staple of its soil being equal to the production of the fullest crops of the most valuable grain, or to the fatting of stock of the first rate quality. The sportsman could have little reason to complain, if his liberal allowance of 1000 acres, as here proposed, should be suffered to remain in woodland, and this in the wildest and most romantic part, where the natural aspect tends to the protection of the favourite objects of his amusement.

The principal natural vegetable productions that I had an opportunity of noticing, as in some degree rather peculiar to the forest, are the following:

1. The stout native oak[*] *(quercus robur)*, in considerable quantity, and promising and good in quality. An oak called Swilcar-lawn oak, on this forest, contains at least 1000 feet of timber; it is of great antiquity, but still fruitful in acorns.

2. Holly *(ilex aquifolium)*, in great abundance; has been nursed up and encouraged in growth, I suppose, as winter provender for the deer.

A very small proportion of the other species of wood; though the forest is not without some of the common underwoods[†].

Grasses.—3. Vernal-grass *(anthoxanthum odoratum)*; very common all over the forest.

4. Annual meadow-grass *(poa annua)*; chiefly near road-sides: none of the other finer grasses being yet in the ear (it being only May 21), they could not with certainty be discriminated.

5. Seg-grasses *(carex's)*; several sorts in moist spots, and, indeed, all over the forest, would be weakened, and give way to better herbage, when any attention shall have been paid to discharge the stagnant water.

6. Louse-wort, or red rattle *(pedicularis sylvatica)*;

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[*] There are not, I apprehend, less than 1000 acres of oak timber now standing on Needwood-forest, a quantity, of which few other forests in the kingdom can at present boast.

Swilcar oak, the father of the forest, girts, at 5 feet high, 21 feet; the lower stem is 10 feet clear; the whole height about 65; the extent of the arms about 45 feet.—*Rev. S. Shaw.*

[†] There are hazels, thorns, and maples, in tolerable plenty. There are very few ashes on the forest (and those few only on two or three particular spots), though all the circumjacent enclosures abound with them. There are two ancient limes of vast size (a mile distant from each other) on the forest, and I know of no more. No elms or beeches are met with on the forest; though the former tree flourishes extremely in the neighbouring enclosures.—*T. Gisborne, Yoxall-lodge.*

a bad pasture plant, but encouraged or weakened by the same causes with the last: I observed some with white flowers.

7. Gorse *(ulex Europæus)*; in patches all over the forest.

8. Petty whin, or hen gorse *(genista Anglica)*; in various places.

9. Common fern *(pteris aquilina)*; on dry banks.

10. Branched polypody *(polypodium dryopteris)*; common on the forest.

11. Wood spurge *(euphorbium amygdaloides)*; very common on most parts of the forest; has a singular appearance: I have seen this plant no where else wild in Staffordshire.

12. Hound's-tongue *(cynoglossum officinale)*; very common: has rather a beautiful flower; worthy a place in shrubberies or flower borders.

13. Spurge laurel *(daphne laureola)*; common; and some specimens of it variegated.

14. Spurge olive *(daphne mezereum)*; less common than the last.

15. Bilberry *(vaccinium myrtillus)*; in moist places.

16. Ramsons *(allium ursinum)*; near Marchington Woodlands.

17. Woodroffe *(asperula odorata)*; growing intermixed with the last.

18. Black briony, or lady's seal *(tamus communis)*.

19. The lily of the valley *(convallaria majalis)*; is to be found in a wood at Rough-park, near Needwood-forest.—*Mr. Gisborne.*

The above are the most common, singular, or peculiar in some measure to the forest, besides many others in common with other places.

Cannock-heath is the most extensive waste in the county, but its extent cannot easily be determined with accuracy; I estimate it at about 40 square miles, or upwards of 25,000 acres. Large tracts of land on the north and west parts of this waste, consist of a good light soil, adapted to the turnip and barley culture: the east and south parts are a colder gravelly soil, in many places covered with heath to a large extent; yet I have no doubt but the whole may be brought into cultivation; and that some of our enclosed land now under cultivation, is not at all of a superior quality to this waste.

Sutton Coldfield is also a very extensive waste, of no other use but as a sheep-walk, or rabbit-warren: that part of it in Staffordshire contains, according to an estimate by a very intelligent resident near the spot, about 6500 acres; and he supposes the additional waste land between Lichfield and Birmingham, including Bromwich-heath, Aldridge-common, Walsall-wood, Whittington-heath, and Weeford-hills, will raise the amount of Sutton Coldfield to 10,000 acres: their value in their present state amounts, by his information, to *3s. 6d.* per acre; and if enclosed, would rise to *10s. 6d.* per acre for the first 21 years, and afterwards be greater. The other principal wastes in the county are those of Swindon, Wombourn, and near Stewponey, in the south; Morredge, Wetley-moor, Stanton-moor, Hollington-heath, Caverswall-common, in the north. In other parts of the county we find Calf-heath, Essington-wood, Snead-common, Wyrley and Pelsal commons; Tirley, Ashley, and Maer heaths; Swinnerton, Tittensor, and Shelton heaths; Houlton, Milwich, Hardwick, and Fradswell commons, and many others; and upon a retrospect of the whole*, I cannot put our practicable waste lands, or such as are capable of being brought into cultivation, at less than 100,000 acres. Their present value, as sheep-walks, amounts to 3*s*. per acre per annum: their value enclosed, and after one round of cultivation (tithe free), will amount to 15*s*. per acre; and improve by enclosure and cultivation, 12*s*. per acre, or 60,000*l*. per annum. The present capital, or value of stock belonging to such land, may be estimated at 10*s*. per acre, or 50,000*l*.; the capital of the land, when enclosed and cultivated, including buildings, fences, crops, live stock, implements, and furniture, would amount to 15*l*. per acre, or 1,500,000*l*. The addition to the national capital, by such general enclosure and improvement in this county, would amount to 1,450,000*l*. This land also would make many farms, which, with a due proportion of labourers' tenements, would employ a population of 20,000 persons, children and families included, in cultivation, and other occupations connected and dependent thereupon; would furnish food for double that number, and would maintain, also, at least twice the present number of sheep; if sheep stock should become the chief object, independent of other stock, which at present draw no nourishment or subsistence from this tract. Those farms, also, would produce a proportion of corn: the wool also of the sheep might be increased in weight, and improved in quality, by a due attention to rams and breeding stock. A general enclosure, and improvement by cultivation, of all the wastes of the kingdom, would, by greatly increasing the national capital, have a proportionable effect upon the revenue; and it is astonishing, that the colonization of distant countries should have been so much encouraged, while the cultivation of our own country remains so far from being finished or perfected.

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* I observe, that Mr. Pitt has omitted taking notice of a common at King's Bromley, which, by computation, may contain about 1000 acres; great part of it is over-run with heath: it is a peaty soil, and gravel bottom; on one part is a large rabbit-burrow, which, if enclosed, would be of great improvement.

Also, there is another common adjoining, called Fradley and Alrewas common, supposed to contain betwixt two and three thousand acres; one part of it is the same sort of land as the other common, and one part is exceeding good land, capable of being turned into excellent meadow or pasture land; there is marl near adjoining some parts of it.

The canal from the Trent to the Mersey runs through both these commons, and the Birmingham and Fazeley Canal joins the other canal on this common. I have also to observe, that there are several large open meadows belonging to the townships, who have right of common, which, as soon as the hay is got off, are laid open to the common, paying about 1*s*. per head of cattle to the churchwarden of Alrewas; which, if enclosed, would be of great advantage to the parishioners.—*Mr. W. Webb.*

* In all enclosures, the impracticable spots (those too uneven for the plough) should be reserved for other uses; for plantations, where the soil is at all adapted for that purpose; or for rabbit-warrens upon sandy bottoms: I have often observed plantations succeed extremely well on the sides of precipices, "and where there appears little or no soil, among rock or stone."—S.

Although several enclosures of the above-mentioned waste lands have taken place, from 1796 to 1804, it may be proper to let the foregoing account remain, as a record of their former state: the following is the present state of such enclosures.

1. Needwood-forest. Since drawing up the former account, an Act of Parliament has passed, and been

acted upon, for the enclosure of this fine tract of land. Part of the holly and oak timber has been sold and cleared off, the deer have been destroyed, the necessary roads have been laid out and formed, part of the Dutchy of Lancaster share has been enclosed, and some progress made in filling up the timber plantations; some progress is also made in the subdivision and enclosure of other parts of the forest, but none in the improvement by cultivation.

The commons of King's Bromley and Alrewas have been enclosed; also Bromwich-heath, and that part of Sutton Coldfield lying and being in the parishes of Aldridge and Barr. These are in part brought into cultivation, and covered with growing crops; and other parts preparing for turnips, or in fallow, and coming round in course. The common of Calf-heath is also under enclosure; and I suppose the enclosure of waste land that has taken place, or is now in hand, within the county, since the former account was drawn up, amounts to 15,000 acres, reducing the quantity of practicable waste land to 85,000 acres.

CHAP. XII.

IMPROVEMENTS.

SECT. I.—DRAINING*.

OF this most essential improvement of meadows and pasture land, as well as arable, much remains to be done, though great exertions have been made in it of late years. The practice most approved here is, after having opened a sufficient number of ditches or main drains, to a proper depth, to cut from and into them a number of drains of about fourteen inches wide at top, to four or five inches wide at bottom, and three feet deep; then to fill up these, first, with a small layer of heath or ling; secondly, with pebbles or rock stone one foot thick; thirdly, with another layer of ling; then to place the first spit or turf reversed upon the upper heath or ling; and to fill it up and close the whole with part of the soil, and to spread the remainder of the soil on the surface of land so drained. Close drains thus executed will last a great length of time, if properly done, and if the open drains shall be kept properly cleansed out. Other methods are also used; as that of draining with hollow bricks; that of forming the bottom of the drain with a bearing on either side, and a narrower open space below, with the first spit or sod of turf inverted and returned, and the drain filled up with the soil. These are practised with good effect; but the first named method is most generally approved, in which, where stones are scarce, wood is sometimes substituted. The improvement is generally reckoned to pay the whole expense in two or three years, and within my acquaintance is so generally practised, that there are few individuals who do not do more or less of it every year. This opinion is corroborated by others, particularly the Rev. Mr. Wright of Bradley, who says, "more attention has been paid to that important article of draining lands, within the last twenty years, than in centuries before. Covered drains are commonly used." Attempts too have been made to tap springs*, by boring into them, by Mr. Elkington and others, and sometimes with success. Mr. Bradburn, from much experience, thinks

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* The most material article in draining, is beginning high enough in the sound land, and gaining the quickest fall; by which means the cause is at once removed, and the land drained effectually.

When stone can be got at a reasonable charge, wood and faggots may be saved; for there will always be a sinking in the surface of the ground, as the wood decays.—*S.*

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* The great success which I have had in draining land by boring, induces me to state a few particulars respecting that practice. I had recourse to it at first, in a close near Derby; which, though it occupied the declivity of a hill, continued extremely injured by humidity, in spite of the reiterated efforts to drain it, which had been made under the direction of my steward, an intelligent and experienced person. Having heard that a labouring man (who had been much employed in the mines in the northern part of the county) had thoroughly drained, by a new method, some obstinately wet land in the neighbourhood of Derby, I was induced to set him to work on the close mentioned above. He cut two or three trenches about eighteen inches, or two feet deep, and narrowing towards the bottom, across the hill; the uppermost of which was, if I recollect right, a few yards lower down the hill than the spot where the water seemed to ooze out of the soil, and encourage rushes; and joined them by another trench in the direction of the declivity, which was continued down the hill until it met a brook at the bottom. He then bored perpendicular holes in the cross trenches, perhaps ten or fifteen yards from each other, with

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a bit (as the tool is termed) formed like an auger, with a strong nose, and near three inches in diameter, and twelve or fifteen long, exclusive of the shank by which it was screwed to the boring rod. The boring rod was composed of several pieces of the length of about five feet each; and when at its full extent, was twenty-one feet long. After boring through a clayey stratum, he entered one of gravel, where the water was. The water rose in a constant stream up each of the holes, in which clean pebbles were put if the sides were in the least danger of crumbling; and all the trenches being likewise filled with clean stones to a sufficient depth, and covered in the common way, the water was conveyed into the brook, and the land perfectly cured.

In consequence of the success of the preceding trial, made many years since, I have repeatedly, and with equal success, made use of the same method, in order to drain land near this place, Yoxall-lodge. After digging through the superficial covering of loam, we commonly meet with a stiff marly clay, which, as we descend, appears more marly, and in the depth of a few feet becomes excellent marl. This marl continues to the utmost depth which we have ever reached (about twenty-one feet), yet becoming harder and more difficult to work as we descend, until for some feet at last it is of a stony hardness, so that the auger will not pierce it, and it is necessary to chop it in pieces, by using a bit, formed like a chisel (lifting up the rod, and then letting it drop with its full weight), and afterwards to extract the fragments with the auger bit, or with one made like a carpenter's gouge. This is a slow process: we usually begin to meet with water at the depth of ten or twelve feet; and with more and more gradually as we go lower. From these holes a clear stream runs during both summer and winter, with little, if any, variation. The situation in which I have found the greatest quantity of water (of course I speak *locally*), has been on the ascent of hills, a little way from their base. After boring with the greatest effect in such spots, I have begun to bore in the flat and moist meadows, only at the distance of a very few yards; and have continued to bore at intervals quite across them, without procuring any water at all: the reason, however, has been obvious. On the hill side the stratum which we perforated, was uniform and solid, and the water rose in the hole as in a leaden pipe. On the contrary, in the flat meadow we found no regular strata, but a confused and often changing mixture of various soils and materials, forming altogether a composition through which the water thinks the best method of under-draining to be with hollow bricks, which he says are more durable, and safe from being injured by vermin, than any other method*.

SECT.

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water could escape from the hole latterly in various places. However, in other parts of the same range of meadows, the marly stratum has recurred (often with a small elevation of surace), and on boring has yielded a considerable and permanent quantity of water.

Having occasion to convey a stream (procured by boring several holes on the first ascent of a bank) about one hundred yards across a flat meadow, I laid a sough of hollow bricks surrounded with stiff water clay, some distance below the surface, for that purpose. In a few months I observed the stream, which issued at the mouth of the sough, gradually to diminish, and at length totally to fail; and a swamp began to form on the other side of the meadow, near the place where the holes whence the water issued, were bored. The sough, in which a stoppage was thus manifest, was opened; and it was found completely filled from end to end, by a cylindrical plug, composed of the roots of grass, which having entered between the joints of the bricks, were drawn out by the stream into filaments of immense length, and matted together, so as to prevent all water from passing. It was then relaid with mortar; but in the next year precisely the same circumstance recurred. It was relaid afresh with mortar, and the joints further secured by the application of broken pieces of tiles. Several years have now elapsed, and it has continued to answer perfectly. Another sough of the same kind, and for the same use, laid without mortar, has never been penetrated by roots of grass; but it lies deeper in the ground than circumstances would permit the former to be sunk. *T. Gisborne, Yoxall-lodge, April 8th, 1795.*

* Covered hollow-drains made in the year 1794, on the estate of John Holliday, Esq. in the parish of Dillorn, alias Delverne, in the county of Stafford, about - - - - - - - - 700 yards.
Open hollow-drains between lands so well ditched and fenced, as to prevent cattle from injuring them, - 1300
Total, - - - - - - 2000

All the above-mentioned drains are made of hard stone. The land was so much injured by water, arising from internal springs, as to produce, for several years past, little besides an abundant crop of rushes. The

SECT. II.—IRRIGATION, OR WATERING.

IRRIGATION, or the improvement of land by watering, is, or may be, a very important and extensive part of agriculture: and though the advantages to be derived from it are generally admitted and well known in this county, at least by all intelligent farmers, yet

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nature and quality of the soil is clay, mixed in some places with a marly substance, so as, with a coat of lime and another of sand, to be capable of great improvement, now it is become dry. The spontaneous produce was, rushes, mixed with moss, and some grass, and in that state the land was not worth 10s. an acre: the supposed improved value is from 20s. to 25s. per acre. The under strata, whence the springs arise, was, in consequence of boring, found to be of a black colour, of close texture; below that, shale was found, and the workmen thought it indicated in many places that coal lay beneath.

The depth of the covered drains is about four feet; at the top they are two spades wide, and taper nearly to a point downwards, in the Hertfordshire and Essex style of draining. The open drains are from five to six feet deep, and not less than a yard wide at the top. Both sets of drains have hard and very durable stone near the bottom, placed thus—two flat thin stones being placed at the bottom, so as to rear against the sides, a square stone was *wedged* in between them, whereby a good bottom-drain is probably secured for many years. The covered drains consist of another coat of larger stone, three of which are placed thus: The covering-stone rests partly on a ledge on each side of the trench (which is easily made when the workmen narrow from two spades to one), and partly on the side-stones, which leaves it very firm. The inverted sods follow, but not promiscuously; since, by placing one on each side of the trench, like an inclined plane, two more drains are gained; and these, by being near the surface, assist wonderfully, till poached by the cattle, in carrying off the surface-water which hangs on clay soils. The stones in the covered drains rise nearly two feet; and the remainder being covered with good clods, called, in Staffordshire, ramping clods, not a single foot of ground is lost by the draining; the above account of draining extends to near 40 acres.—*Communicated by the Rev. S. Shaw.*

it is by no means in general carried to the extent of which it is capable; many streams being suffered to glide quietly down their own channel, which might easily be drawn over the adjoining lands, to their great improvement. This omission is in part owing to neglect; in part to the jealousy of millers and other persons interested in the streams; and in some degree, to the best methods of extending this application of water not being generally and sufficiently understood. The industry of many individuals is, however, very properly and successfully exerted in this very commendable species of improvement.

Respecting a system for irrigation, no general one can apply to particular cases. Different modes of spreading the water must be adopted, according to different circumstances of situation and form of surface. In all cases where a stream naturally falls down a valley, and the sides of such valley consist of easy and regular declivities, the best way undoubtedly is to draw a sufficient quantity of water nearly upon a level, along a main carrier; such water to be let out of the said main carrier at pleasure, by sluices constructed in different places in the sides thereof, into floating gutters: such floating gutters being cut on a level along the sides of the declivities, one below another. These floating gutters will collect the water from the spaces of land above them, and, if well constructed, deliver it very regularly upon the spaces below each of them respectively. The watering in this case will require very little attendance, except that of opening and closing the sluices in rotation, so as to irrigate different parts of such land successively. The gutters too will require an annual cleansing or scouring

ing out, otherwise they will choke, and grow up with grass.

The particular mode of action or operation by which land is benefited by watering*, has not perhaps yet been satisfactorily explained: yet it is an established and well known fact, that all waters (except such as are highly putrid) produce a good effect upon land, in some degree proportioned to their rapidity or briskness of motion. Thus common water suffered to stagnate upon, or dribble in small quantities over land, will encourage the growth only of rushes, *carex's* (sedge-grass), and other coarse *aquatics*, and weaken, if not destroy, the finest and most valuable grasses. The same water driven over the same land with a brisk motion, and the surface left to dry at intervals, and exposed to the sun and atmosphere, will have a direct contrary effect: the valuable grasses will flourish, and the aquatics be weakened or destroyed. Hence it should seem, that the good effects of watering are in part produced by mechanical operation, by moistening and tendering the surface; which circumstance, combined at intervals with the effects of the sun and atmosphere, bring into action the latent principles of vegetation in plants; which principle would have lain dormant, under the influence of chilling or stag-

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[*] Watering will not have a good effect on all soils; a brook of pure soft water runs through my farm, which makes great improvement on the warm soil; but on a strong cold clay which it goes over with equal rapidity, it does much injury: this I conceive to be from the clay retaining more water, and longer, which leaves the soil heavy, and becomes too much bound for vegetation, rushes excepted. Perhaps watering hath not generally that good effect as to profit commonly supposed, if we consider quality against quantity of produce.—*R.*

nant water; or would have been locked up by the matting of turf on the surface, had not such turf been softened, and made easily penetrable by moistening its surface. The coarse aquatics being hardier, vegetate in a less degree of heat. They seem intended by Nature to fill up those vacancies which are yet unprepared for the production of the more valuable tribes, upon this principle in her vegetable economy, that a bad plant is better than none: yet upon the proper application of human industry they always decline, and give way to those of superior value.

Every one knows the necessity there is (previous to improvement by irrigation) of discharging the stagnant water from, or from near, the surface of all lands intended to be so improved, by hollow drains or otherwise.

As the benefit to be derived from irrigation depends so much upon the watering being effected with a brisk motion, and not continued for too long a time, the great desideratum in this species of improvement seems to be the introduction of reservoirs, constructed so as to contain large quantities of flood water; which water so collected may be successively and at pleasure distributed upon any land below its surface, and continued with such velocity, and for such length of time, as may be thought proper.

This idea, as applicable to agriculture, is I believe novel, and may be treated as visionary; but I am so thoroughly convinced of the great advantages to be derived from it, that I will venture a prediction of its being in some future time practised to a great extent. The practice will be much facilitated by the construction of dams being so well, and so commonly understood, in consequence of the number of navigable canals which have been, and are still executed. A reservoir of a few acres, and of two yards average depth, may be constructed, at from ten to twenty pounds per acre, according to circumstances of situation. Such reservoirs as a fishery (under proper management) would be equal or superior in value to an equal breadth of land, and the surface water to a certain depth may be drawn down for the purpose of irrigation at pleasure.

Upon this subject of water the following extensive idea is thrown out by an ingenious gentleman*, high in his profession as an engineer; which is, that nine parts in ten of the waters of the kingdom at present run away in waste, great part of which might be usefully employed; nay, farther (putting expense out of the question), that every stream in the kingdom may be made to run equally through the whole year. This position, however extraordinary, is easily demonstrable; for if upon any given stream, one or more reservoirs be made, capable of containing its flood water, and through the dam or dams be laid a pipe or pipes, whose apertures will just discharge the average produce, the business is done: and though there may be no probability of this business being ever brought to so great a nicety; yet from hence some idea may be formed of the prodigious extent to which improvements by water may be carried.

With this subject, and that of forming reservoirs for the purposes of agriculture, is connected another, of great importance in domestic and commercial economy; namely, the having an extensive command of the application of water to all mechanical purposes, wherein such application will answer better than for irrigation of land, and thus, as it were, arresting every drop of water that falls from the heavens, and rendering it in the most extensive way subservient not only to the immediate subsistence of man and beast, and the improvement of land, but even having the residue solely at command for the purposes of shortening manual labour: such system would certainly be an important addition to the powers required in many of our mechanical operations, and of great importance in a manufacturing country.

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* Mr. Jessop.

A copy of part of the above being sent to Mr. Jessop, I have received from him the following paper, which I had never seen before.

Observations on the use of Reservoirs for Flood-waters.

The rapid improvements which have for some years past been made in the agriculture and commerce of this country, and the happy effects derived therefrom, naturally excite a desire to investigate every means by which they may be continued and increased.

Among the many causes which have combined to promote our prosperity, the facility of intercourse by inland navigation is a great and leading feature. All unite in admitting this as a general position; but many, from private motives, or mistaken opinions, have too often prevailed in preventing the execution of useful projects, which, if they could have been effected, would have greatly contributed to the national benefit derived from those already established.

Among the obstacles that stand forward, none are more conspicuous, nor so generally urged, than the want of water in dry seasons. It usually happens, that where canals are most wanted, manufactures or agriculture having already taken possession of the ground, and occupied the streams of water, it is plainly to be foreseen, that, unless some means are devised to reconcile this competition, those desirable improvements must be crippled in their growth, and stop long before the age of maturity.

It can hardly have escaped any one's observation, that streams of water used for the purpose of working mills, or the more valuable purpose of watering meadows, in the few instances where this has been practised, while they have a scanty supply in summer, they generally discharge in winter such superabundance as frequently to do material injury.

There are, in some parts of this island, exceptions to this general position. Where the soil is porous, and the substrata so open as to absorb the rains as they fall, there are no floods: the pores and fissures of the earth form reservoirs or regulators to the streams; they preserve the winter waters, and so equalize the discharge, that there is but little difference between their winter and summer state; but in clay or other similar soils, so little is absorbed, and so much suddenly glides off from the surface, that the extremes of scarcity and exuberance are the necessary consequences.

It is now well understood, that all natural springs derive their supply from the waters of the atmosphere; and they may fairly be considered as the discharges of natural reservoirs; it is immaterial whether those reservoirs may be composed of large cavities, or minute fissures.

Leaving expense out of the question, it is possible to conceive (however extravagant the idea may appear), that the waters of all rivers might by art be nearly equalized throughout the year; but it will be sufficient to prove, that this is practicable if applied to small rivulets or brooks, particularly where Nature holds forth a temptation, by furnishing deep ravines, or capacious hollows on the surface of the ground, capable, at a moderate expense, of being made to contain large quantities of water.

We are taught, from the simple instinct of animals, the provident lesson of storing up the superabundant supplies of one season for the wants of another. Necessity has compelled mankind, in many countries, to follow their example. In hot climates, the inhabitants could hardly exist without storing up the waters of winter for their use in summer*.

There are instances in this country, where canals are in want of water in summer, while the brooks that supply them discharge floods in winter, in one day, sufficient for the supply of the whole year.

Those who entertain doubts of the practicability of making reservoirs sufficient for the supply of canals, state their objections under three heads: the expense, the want of sufficiency of water, and the uncertainty of making such reservoirs to retain it.

When the necessary magnitude is ascertained, the expense is a subject of plain calculation; and it is easy to determine, whether the project to which it is to be applied will bear the expense. There have been several instances, where the expenses of repelling an opposition from mill-owners to a Bill in Parliament, would have been more than enough to have made sufficient reservoirs.

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* At Alicant, the King of Spain has made a reservoir, the water of which, for the uses of summer agriculture, bring him in a revenue of 2000*l.* per annum. See various parts of Townsend's Travels through Spain, for the utility of such reservoirs.

Whether they can be filled with water, may be known before they are undertaken, by an inquiry and measurement of the discharge in winter.

The waste of water from a reservoir is in two ways; by exhalation, and by leakage. The first, in a dry summer, would consume about nine inches in depth from the surface: the making the head nine inches higher than otherwise necessary, would compensate for this. The leakage would be in few cases (where it would be prudent to attempt the scheme at all), even upon small streams, more than equal to the summer supply; and whether the water may be discharged by leakage, or by a pipe or artificial discharger, if they shall both discharge into the same channel, is not very material. In clay or other soils, where rushes grow, there will be no sensible leakage; and in soils more open, the pores of the soil would be an extension of the reservoir; and in cases where it might be necessary to discharge constantly from the reservoir, a quantity equal to the summer stream, it would, for a while, supply that discharge.

Even in extreme cases of leaky soils, if there were any sudden floods, the reservoir would at least prevent their sudden discharge; but where the soil and strata are so close as to absorb little, and cause sudden floods (and it is to these cases that reservoirs are peculiarly applicable), there is little reason to apprehend leakage.

The Writer of this has lately had an opportunity of experiencing the effect of a small reservoir (not yet completed) as a regulator to a stream. It covers at present about 20 acres, and is made on a small brook, which, in dry seasons, does not furnish more water than would run through an aperture of an inch in diameter; but is subject to floods, which can hardly be discharged by a pipe of three feet in diameter.

There is fixed under the head of it an iron pipe of six inches bore, which during the last winter has almost constantly been open; and discharged a quantity unequal no otherwise, than from the difference of pressure by the rising and falling of the water in the reservoir, at the different intervals of rainy and fair weather; and when the reservoir shall be enlarged, on the one hand, the meadows below will never be overflowed; and on the other hand, the reservoir will furnish, in the dry part of summer, *at least twenty times* the quantity of water daily that the brook would otherwise afford.

There is now depending in Parliament, a Bill for making a navigable canal through the vale of Belvoir to the town of Grantham, where the soil is almost wholly a firm tenacious clay, and will not require above half the water to supply it, which is necessary for canals in other instances.

The country is subject to an extreme scarcity of water in summer, and to great superabundance in winter; and every circumstance is favourable to the intention of supplying the canal by artificial reservoirs. It is therefore earnestly hoped, that those who might be induced by their doubts to repel the intention, under the idea, that because no canal hath hitherto been *totally* supplied by reservoirs, therefore it must be impracticable, will give some credit to those who, on well-grounded information, have advised the measure; and that they will suffer it to be effected.

It is hoped, that the execution of a canal upon this system may tend to promote the extension and continuance of those improvements in commerce and agriculture, on which so greatly depend the prosperity of this country; and which, in many instances, already have been checked, by neglecting to use the assistance of Art in remedying the defects, or rather in using or improving the bounties, of Nature.

W. JESSOP.

Written in May, 1792.

Farther, respecting the particular subject of applying water to the improvement of land, though this practice is by no means carried to the extent of which it is capable, and large quantities of flood-water are lost (which, in the tenacious clay soils that abound over a considerable part of this country, can be retained in no other way than by artificial reservoirs), yet considerable exertions are made in this business by many persons, and omitted by few who have the means of doing it; almost every occupier who has a stream through his meadows, bestowing considerable attention to it in floods. Amongst others, my neighbour, Mr. Miller, of Dunstall, near Wolverhampton, has upwards of 180 acres of land capable of irrigation; and when water abounds, it is applied to this purpose in various ways. Upon his farms are two mill-ponds, and the mills kept in use in his own hands. The jealousy of the millers below upon the same stream, prevents his applying it to this purpose at any other time except when there is plenty of water; on which occasion he often rakes up the mud of his mill-ponds, by small harrows dragged in them to and fro by ropes; which mud is, by this means, sent in the water over the land; which water is drawn in floating gutters to every part of the land the level will admit; and the consequence is, an early and plentiful hay-harvest, often after spring-grazing. There are few instances in this county of land formed artificially for the purpose of receiving water by irrigation, by being laid in broad ridges; and the few I have seen, would certainly induce any attentive person to reject the method. The soil is seldom left equally upon the land; and the length of time lost before a good turf can be restored, is a great objection to the practice: and as the water may, in almost all cases, be as well applied upon an even surface, variously disposed, as land often is by nature, I think such mode of application is to be preferred to breaking the turf, and giving it a new form. Upon the estate of Lord Bagot, adjoining Tedbrook, I observed a considerable tract of formerly morassy land, after draining and being made sound, prepared for irrigation in a very ingenious way; without altering the natural disposition of the turf, the business effectually done, and meant to be gradually and progressively extended down the valley. At Stoke, near Stone, about 50 acres of meadow land are watered in a very superior style, from the Trent, and from land-floods, by Messrs. Jenkinson. Here the main gutters, or carriers, are constructed with some fall down the land; and from them are cut, sideways, a proper number of floating gutters upon an exact level. Below each of these floating gutters, in the main carriers, are fixed wooden trunks laid in a puddle, with a sliding paddle to each; by means of which, the water is either kept back along the floating gutters, and so forced upon and over the land, or drawn down the main gutters, and off the land at pleasure: the gutters are generally constructed deep enough to drain the land, when not used for floating.

ing. These meadows have been much improved by this practice, which commenced about seven or eight years ago; before which, I was informed, they were of little value; but at present, after spring-grazing, they mow a full crop of hay, and are improving every year.

On this subject of irrigation, or watering of land, much remains to be said; some respectable persons I have conversed with are of opinion, that, ere long, all, or nearly all, the water of this country that can be so applied, may be spared for watering; that all machinery will be more commodiously put in motion by the force of steam (this has already been applied, both in iron-works, and the grinding of corn, with success); that the natural situation of a corn-mill is not in a remote situation, upon a stream where a team must be constantly employed to carry in and out, but upon a canal, and near a large town, where coals can be commodiously delivered to keep the machinery in motion, and where the consumption of the wheat flour is upon the spot; that iron-works will be erected upon this principle (indeed they have been already, in many instances), without any regard to a stream of water, but where the iron ore, and materials used for fluxing it, are to be found, and upon the banks of a navigable canal; that upon this principle, when the machinery of mills, and other works now upon streams, are worn out, such works will generally be moved to more convenient situations, and most of the streams be left for the improvement of land.

It is certain that, in the present state of mills, much injury is often occasioned, not only by preventing the improvement of the adjoining land, at the same time that the mill is of little public or private utility, but merely kept up because an ancient mill; but also by backing the water upon the lands above, and preventing the drainage of such land. I know an instance of an ancient mill, the property of a gentleman of fortune, which at times occasions the drowning of part of a town, merely by backing the water, forcing it even a considerable depth into some of the houses; yet the mill is of little value or importance, nor do I know that the circumstance is known to the owner. Many of our ancient mills are great nuisances, without being of much use in the manufacture of bread; and if the above-named system should be adopted, their waters will be advantageously used in the improvement of land.

I know but one instance of an attentive person rejecting the use of water upon his meadow land: he thought he observed, some few years ago, that the grass was growing coarser, and the rushes increasing, and has kept the water off ever since. It should be observed, that the meadow thus watered is of a moist peaty nature; and the water applied of a poor chilly sort, arising in moist land, without any loamy particles. He has, however, drained the meadow more effectually, and means to try the effect of watering over again.

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SECT. III.—PARING AND BURNING.

Paring and burning has been but little practised in this county, and opinions vary much as to its propriety. I have often observed it practised in other counties, but other means are used here even for reclaiming waste lands. Many people have an idea, that it is injurious to thin soils[*]; and perhaps deep soils can best bear the operation. Burning of couch-grass is practised by some[†]; but most people think, even *that* is better destroyed by tillage, and sunshine upon the land, if the season will admit it.

SECT. IV.—MANURING.

THE manures in general use in Staffordshire are, first, the dung of the farm-yard, consisting of littery straw, rain-water, and the dung and urine of animals: most farmers turn this over once, previous to drawing it out; but no covered fold-yards are known here. The detached parts of straw, dung, rick-yard and barn-door rubbish, are, after being well trod with cattle, or thoroughly wet, drawn into a heap to ferment, near where it is meant to be used: this manure is generally laid on wheat fallows, or on land in preparation for turnips; but sometimes on young clover, pasture, or meadow land. Secondly, town manure; this can be only used in large quantity, by those who are conveniently situated for conveying it: when of a good quality, it is the best of all manures, and is used with equal advantage either in tillage land, or upon turf. Thirdly, lime; this is a manure of very extensive application, and of which great quantities are annually and constantly used upon all sorts of land: it is supposed to attenuate, break, and divide strong soils; to bind and contract sandy ones; and to ameliorate and correct the acidity of old, sour, uncultivated lands*: its utility is very generally admitted; and many persons who have declined using it through prejudice, have been quickly reconciled to the use of it, upon finding their crops inferior to those of their neighbours who had persevered in using it. It is laid on at the rate of from six to ten quarters per acre: the price at the works, from 3*s*. to 4*s*. 3*d*. per quarter, according to quality of the lime, and situation of the works; and the carriage, and other expenses, nearly, and at some distances quite, as much as the prime cost. It is generally laid on tillage land, either for barley, turnips, or wheat; and is deemed best to lay it on in a quick state, soon after slacking, and to harrow it in when the land is dry: it is sometimes laid on turf land, and, it is said, with good effect. It is frequently fetched 15 miles by land carriage for manure, and is, I think, used in a more extensive way than I have observed elsewhere, and its use is still increasing.

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[*] Nothing but vegetable substances can be consumed by burning; but it is frequently wrong to destroy these, as they are useful to leave in the staple, for the purpose of fermenting with manures.—*S.*

[†] It generally answers best, to cart off this and all other rubbish, to mix with quick-lime, and rot in a heap with other compost.—*S.*

Those people are much mistaken in their ideas; for the thinnest chalky soils are most improved by this practice.—*Mr. Boys.*

We have no chalky soils in Staffordshire; and it is very probable, that a calcareous soil will better recover the effects of having its vegetable parts dispersed by combustion, than a thin soil, whose staple is principally sand, light earth, and small pebbles.—*W. Pitt.*

Fourthly, marl. This has been much used on arable land for ages back, as is evident from the very extensive marl-pits to be found in different parts of the county: in many places the land has been over-marled, and is rendered harsh; this, by fallowing and liming, is ameliorated, and rendered fertile. It is in general only in the loamy soils that a true marl is found; in the mixed gravelly soils is often found a clay marl, or friable brick clay, which is used on such soils with good effect. The quantity laid upon an acre is generally about two rods, of eight yards square each, and one yard thick, or 128 cubic yards per acre; this adds nearly an inch to the staple of the soil. The expense of labour, spreading, and beer included, will be about 25*s.* per acre, besides carting out, which is worth 50*s.* per ac e more; total, 3*l.* 15*s.* per acre. The improvement by marl is believed, in this country, to be much more adapted for tillage than pasture, and its good effects on corn lands are long visible; indeed, in the case of thin, light, unimproved lands, the benefit of marling must endure for ever, as it not only consolidates the soil, but gives it thickness and staple. Marling has been much practised in this county, but the advanced price of labour is a check to its progress at present.

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* The destruction of all grubs, snails, &c. within its reach, is likewise a consideration of moment, especially if laid on hot from the kiln.—*S.*

The above are the staple manures of this county, to which may be added composts, consisting of shovellings of soils, scrapings of roads, scouring of ditches, mud from pits and ponds, used alone, or mixed with lime or dung, and generally used for a top-dressing for meadow and pasture land. The ashes of our culinary fires are used as top-dressings for coarse pastures, but are improved by mixing with night soil. Soot is used as a top-dressing on wheat and other crops; and bone filings, or shavings, from the Birmingham manufactures, is esteemed a valuable manure for light tillage land: in short, all the manure made in town and country is laid upon the land.

SECT. V.—WEEDING.

The weeding of corn land, if the crop be drilled, is, or should be, performed by the hoe: if broad-cast, thistles (which cannot be handled) should be drawn up with tongs, and other weeds by hand. Turnips are cleaned, first by the hoe; and if any weeds remain, they should be drawn by hand. On meadow and pasture land, docks should be rooted up by a proper tool after rain, as well as the ranker thistles; though in the hurry of business, they are often mown only, which in some degree checks, but not destroys, them. In Chap. VII. on Tillage, and Chap. VIII. on Grass, is given a list of our most common and noxious weeds, to the destruction of all which, great attention should paid before they perfect their seeds, otherwise they will sow themselves, and increase an hundred-fold. To shew the importance of attending to this subject of weeding properly, it may be observed, that this business, if well done, will lessen every year; but if neglected, will increase beyond calculation: for—

> "One year's good weeding,
> Will prevent seeding;
> But one year's seeding,
> Makes seven years' weeding."

As a preventative is much better than a cure, it would certainly be an improvement in our rural polity, if it were preventable and fineable at quarter sessions, and the offender punished by fine accordingly, who should suffer weeds to run to seed on his premises, particularly those of the class *syngenesia*, which, having their seeds furnished with wings, will disperse them over

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over a whole country. The following is a list of some very troublesome and pernicious weeds of this class:

1. Colts foot *(tussilago furfura);* the seed flies in April and May.

2. Groundsell *(senecio vulgaris);* seed flies all the summer.

3. Common thistle *(serratula arvensis);* flies in July and August.

4. Great, or spear thistle *(carduus lanceolatus);* flies in August and September.

5. Sow thistle *(sonchus arvensis);* flies in August and September.

6. Smooth succory *(crepis tectorum);* flies from Midsummer to autumn.

The seeds of these weeds (and of many others), when fully ripe, will hover in the air in windy weather, like winged insects, and fly to any distance, till saturated with moisture, or becalmed, they deposit themselves on cultivated ground, or newly raised banks of earth, where they soon vegetate and establish themselves in vigour. Many persons have supposed, from observing their growth upon newly-raised banks of maiden earth, such as canal spoil, &c. that they had been dug with such soil out of the earth; whereas nothing is more simple, or natural, than thier flight from the parent plant, borne up by feathers, through a current of air.

So long as weeds of this nature are suffered to disperse their seeds over the country by neglectful persons; it is in vain for any one to expect to be clear of them; they ought therefore to be indictable as a public nuisance.

IMPROVEMENT OF HEATH LAND, &c.

The postscript to Mr. Holliday's letter in 1792, to the Society of Arts, &c. was confined to the improvement of the west side of Dillorn-heath, in the hands of a tenant.

"The east side (both of which Mr. Shaw has seen) was cultivated with potatoes, after the heath and gorse had rotted, and been mixed with lime and compost. The crop of potatoes was so abundant as to admit of many loaded waggons being sent in the winter into the vicinity of the pottery, about six miles from Dillorn; which afforded a seasonable supply to many thousand manufacturers of the queen's ware. The quantity was not only immense, but the quality of the potatoes was in so high repute, as that the Dillorn potatoes produced about twopence a bushel above the common market price. In fine, in this part of the Moorlands the potatoe harvest is of great consideration, and the 30,000 artificers and yeomanry there eat very little wheaten bread. Give a cottager in the Moorlands, with a wife and ten or twelve children, a cow and a rood or two of potatoe ground, and you make him an happy man. He goes to his daily labour, earns money to purchase clothing, &c. for his large family; the younger children collect the dung and soil from the public roads, for the improvement of the potatoe ground, and the industrious dame, with her stouter children, keep the ground clean, and attend to get in the potatoe harvest, the chief support of their family, about nine months in the year.

"In these Moorland parts of Staffordshire it has been stated how comfortably many thousands of poor people live by the wholesome addition of potatoes to their ordinary food. But how striking is the contrast in some public institutions in or near London! For instance, the children belonging to Christ's-hospital in London and Hertford, amount to about 1000. The allowance of wheaten bread is a pound each day to each child, and consequently the consumption by the children only is, 7000 pounds weight of bread weekly. This royal hospital (well regulated in many respects), was founded by Edward the Sixth. Potatoes were not then of the growth of this country, and by some fatality or strange inattention, this very cheap and wholesome vegetable has never, nor has any other fresh vegetable, been received within the walls of the hospital for the use of the children.

"It is humbly submitted to the consideration of the Board of Agriculture, whether some useful hint may not, in these times of scarcity of wheat, be given in one of the Reports made to the Board, to draw the attention of the Governors of Christ's-hospital to the introduction of potatoes among their numerous family. Or if a stronger measure should be thought advisable, a clause might be inserted in some act of parliament, containing regulations about wheat or grain, that whenever the price of bread in the metropolis shall exceed for a half peck-loaf, the governors or directors of all charitable institutions in Great Britain, whose respective families or number of children or inmates shall exceed fifty or one hundred, shall for every hundred weight of wheat or other grain, consumed in bread, use or consume one hundred weight of potatoes, or some salutary provision, to a similar effect."

CHAP.

CHAP. XIII.

LIVE STOCK.

THE principally profitable stock of the Staffordshire, and generally of all English farmers, consists of, first, horned cattle; second, sheep; third, horses; fourth, hogs; to which may be added, fifth, rabbits; sixth, poultry; seventh, pigeons; eighth, bees.

SECT. I.—HORNED CATTLE.

THE horned cattle of this county, are very generally of the long-horned breed, varying in value and quality in proportion to the attention of the breeder and his resources for keeping*. It is a dogma almost established into

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* I have received the following notes on cow-stock, from a gentleman, without his name, which I think worthy of attention.

"I am a favourer of the opinion of that great man, Mr. Bakewell, whose judgment surpassed all the breeders of his time, and to whom this kingdom is abundantly indebted, that the soft handling beast, with a skin like a mole, well proportioned, light in offal, a sound constitution, inclining to fatten (which these qualities indicate) when put into any kind of pasture, on any quality of land, will pay better than a coarse beast with thick hide and large bone: the dogma, that all breed is put in at the mouth, is daily refuted by those who attempt to make bad beasts good ones, whilst that blood will shew itself, is abundantly proved into a maxim by many experienced farmers of the old stamp, that "all breed is put in at the mouth;" whilst the modern breeder upon the Bakewellian system will boast, that the merit of his breed consists in their capability of doing well upon the least quantity of food of the ordinary kind. There is no doubt but both parties have wandered beyond the true bounds of Nature; as all good stock must be both bred with attention and well fed; and perhaps it is necessary that these two essentials in this species of improvement should always accompany each other; for without good resources for keeping, it would be in vain to attempt supporting a capital stock, and with such resources it would be absurd not to aim at a breed somewhat decent in quality. The cattle stock of this county hath for years back been (and is at present) in some degree improving; but all general improvements must be gradual, and a work of time. It is not in the power of every farmer, or even of the generality of them, to pay the prices for prime stock; and if they could, the improvement of their meadows and pastures should go hand in hand with that of their stock. Mr. Miller's idea, which I cannot but approve, and wish to see in practice, is, that gentlemen of fortune should procure, for the use of their tenants, the best bulls, rams, stallions, &c.

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proved by well-bred beasts paying double for their keep to what others will."

It was not Mr. Bakewell's opinion that well-bred cattle would do equally well on bad as on good land, but that they would pay more for their keep on any land, than the common sorts, and that he who attends to the breeding of his stock, may by procuring good bulls, by degrees be certain to improve it, be his land what it may, good or bad.—*R.*

This, if they did not choose to do *gratis*, might easily be thrown upon a plan to indemnify expenses, and would tend very much to facilitate the improvement of the stock of the smaller farmers.

The great object in the produce from horned cattle being, first, milk[*]; second, beef; the uniting of these two products in the greatest quantity from the least food or produce of land, seems the ultimatum of breed. It has often been observed, that cows with the best disposition to fatten, not only give the least milk, but soonest go off their milking; whilst a loose, open, ill-made cow will both give a larger quantity, and continue it longer; but it is not so easily fatted, nor without much more time; the uniting of these two qualities in the highest degree is therefore the true desideratum of breeding. The cows of this county will generally give from eight to twelve quarts of milk at a meal (and in some instances more), and two meals per day; but this only in the prime season of grass, May and June; they decline afterwards to three-fourths, one-half, and one-fourth of that quantity, and for two or three months are quite dry. Value of a store cow in calf, or with a calf, generally from seven to twelve guineas: when fat they will weigh from seven score (one hundred and forty pounds) to twelve score (two hundred and forty pounds) the quarter; and are worth in that state, from eight guineas to twenty guineas each; and in some few instances their weight and value have been much greater.

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[*] Cows of a good sort that are deep milkers, will, on being dried, make themselves fat in less time than the common sort of loose, open, ill-made beasts; nor do I think they go earlier off their milk; and were accurate notice taken, it would be found that bad milkers were not much less in proportion amongst the common than amongst the improved sort; but amongst the common sort such are passed off without notice; but a bred beast being a bad milker is marked for it, and subjected to more notice.—*R.*

It is said that five hundred weight of cheese* per season, will be sometimes made from a cow; but I believe in general the produce will be nearer half that quantity. Dairies extend from ten, fifteen, and twenty cows to forty, and in a few instances to more, even to seventy cows.

No great number of oxen are fatted in this county; the few bred therein are generally sold at the neighbouring fairs, and driven to fat nearer the metropolis.

The above account is meant to apply to the general cow-stock of the farmers of this county; some few instances are to be found, where the breed has been carried to a much greater perfection, especially in carcass. The following instances of capital or superior stock came under my observation.

May 20, 1794, viewed the cow-stock of Mr. Princep of Croxhall. His land is mostly, but not wholly, in Derbyshire, and therefore more properly belongs to the Report of that county. I shall just observe, that they are of the long-horned breed, and by long attention have been brought to a very high degree of superiority; large, thick, heavy, and well made, with a pretty good show for milking, and such a disposition to fatten, that Mr. Princep observes, the young stock are obliged to be almost starved by short pasturage, otherwise they run fat and never stand the bull: the cows give upon the average about eight quarts of milk each, which the owner thinks equal, from its superior quality, to a much greater quantity from inferior breeds. Mr. Princep's bull, named Bright, which always has, and will invariably be kept for his own stock, is a majestic noble animal; large, thick, heavy in the valuable points, with the least imaginable proportion of offal; with a skin handling soft and sleek. This majestic animal is so gentle and docile, that three or four persons at once may handle him without the least sign of ferocity or even notice, on his part. Bright-Eye, the son of Bright, now three years old, is a beautiful and most complete animal, and it requires a person of superior skill to that which I possess, to find a single fault in him.

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* The most I ever heard of being done, was by a farmer whose farm consisted of 37 acres, adjoining Needwood-forest: they kept seven cows; began and ended with the same, and on an average sell two ton of cheese every year. This account I had from the factor (a man of veracity), who hath bought the dairy for many years, and weighed it himself.—*R.*

However, 3 cwt. per cow is a good general average.

At Fisherwick, Lord Donegal's, are some very fine large and well-made cows of the long-horned breed, and promising well for milking. An ox was fatted here (of Mr. Princep's breed), and slaughtered in the spring of the present year, 1794, of which the following are particulars:

Weight of the four quarters,	1988 lbs.
Ditto of tallow, ...	200
Ditto of hide, ...	177*

This ox was worth fifty guineas; another, very little

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[*] The famous Lincolnshire ox weighed two thousand eight hundred pounds, the height of which was six feet four inches; and width across the haunches three feet four inches. An ox killed at Leek, weighed two thousand three hundred and sixty-nine pounds; another in the isle of Lewis (Hebrides), two thousand four hundred and twenty-three pounds.—*S.*

inferior, was slaughtered for the use of his Lordship's family the Christmas preceding.

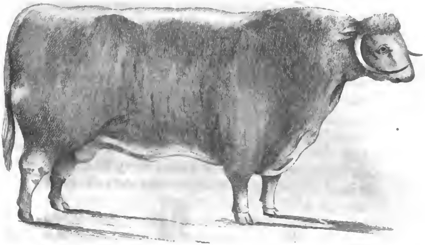
At Blithfield, the seat of Lord Bagot, the cow-stock, both his Lordship's and the steward's (Mr. Harvey's), of the long-horned breed, are very superior, and have been for many years crossed from the stock of the first-rate breeders. The dairy is a great object in this neighbourhood, in which cheese is the principal article, though a good deal is done in the feeding way. In his Lordship's pasture I observed a good many Scotch bullocks, as well as some very fine oxen of his own breed.

At Teddesley-park, Sir Edward Littleton's, the cow-stock is very superior; a few of the cows may rank with the best in the county: they are long-horned, and good milkers, and each has a heavy and well-made carcass; here is also a yearling bull, beautiful both in make and colour, and of a good size, with some very good feeding cows and oxen.

Fine large and good cows are to be found in the possession of many farmers all over the county. At Mr. Huskison's, at Oxley, near Wolverhampton, there have been two recent instances of cows bred on the farm, and fatted there to upwards of eighteen score the quarter: the last, slaughtered in the present spring, Mr. Huskison informed me, weighed three hundred and seventy-four pounds the quarter. These cows made to the butcher forty guineas each; and there are now many good cows on that farm, and a bullock of the breed of the above cows, which promises to be very large and heavy.

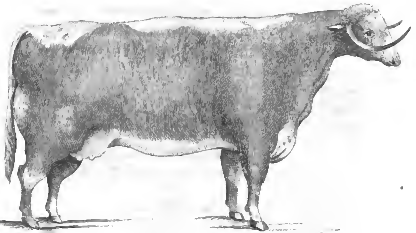
My neighbour, Mr. Miller of Dunstall, has the largest and best dairy that I know in the county. The number of his milkers are upwards of seventy, mostly of the ford

Bright



Supposed the best of their kind now existing.

Prop. of T. Prinsep Esq.ʳ



T. Stringer del.ᵗ Lichfield.

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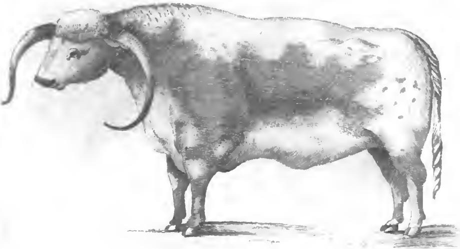
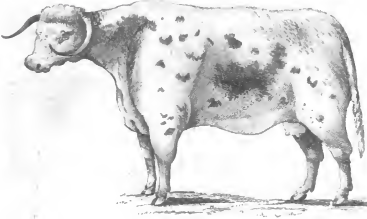
Oxley's Bullock

Mr. Huskison Owner—3 Years old 1795—



Oxley's Cow—

Grand Dam to the above sold to the Butcher by the late Mr. Huskison, for Forty Guineas.



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the long-horned breed; with six or eight cows without horns*. The main object is cheese, of which at least four hundred weight is made per cow. Early in the spring he fats calves for the butcher, and they are sold at eight or ten weeks old, at three or four guineas apiece, and sometimes for more. The cows, when taken from the dairy, or when accidentally barren, are also fatted for the butcher upon the farm, and sold from 10 to 20, and sometimes 25 pounds each, and seldom any are sold in store order, or in any other way. Mr. Miller, in his cow management, has two main objects in view, milk and beef; in pursuit of which the carcass and the milk bag are equally attended to; and the cows here are generally of good size, good milkers, and well made, with a disposition to fatten. The dairy too is managed in a first-rate style. Mr. Miller has a large breadth of land capable of improvement by irrigation, of which he seldom fails to make the best advantage. This, by furnishing an abundant supply of winter keep, enables him to maintain not only the above number of dairy cows, but also a considerable stock of young cattle.

Mr. Dyott of Freeford, has generally between twenty and thirty dairy cows; but being kept at some distance from his residence, I had not time to view them. He informed me, he wished to have them tolerably neat, but his great object was to have them good milkers; amongst his store stock, he shewed me a few very fine and beautiful heifers, of two years and three years old, purchased, I think, from Mr. Princep, of Croxhall.

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* Mr. Miller has since entirely adopted the polled breed, and given up the long horns, having now upwards of fifty dairy cows of this breed; they are large heavy cattle, and good milkers, and will fat to twelve and fourteen score the quarter; and he believes with as little keep as the long horns. He does not know of their being of any particular country, breed, or descent, having selected the originals at fairs and markets where he could, and bred the rest himself; he has now a succession stock of from twelve to fifteen young cattle of each different age of this breed, having reared so many every year. He thinks they milk equally well with the long horns, and fat generally to a greater weight.

Mr. Miller has lessened his number of dairy cows, having increased that of his sheep.

The cows of this neighbourhood are of various colours; red, white, black, and party-coloured; but the red, with or without streaks or patches of white, are most prevalent; and the cows in general of the county are better or worse, in proportion to the resources of the farm they live on for hay and pasturage. Those farmers, perhaps, who have not natural meadows, or streams of water to improve them, do not make cow-stock an object of much attention; and indeed, notwithstanding the plausibility of the theory, that a well-bred beast will do well on the worst soil, it will seldom be found, in fact, that good stock exists any where but where good keeping is found; and that to maintain and improve such stock, the improvement of meadows and pastures must be a primary object, and a supply of good summer and winter provision for such stock must be secured, before success can be expected in improving the breed: and farther, that stock, and the land on which they feed, should have some analogy in quality, seems in part owing to physical as well as natural causes; for on a poor soil the occupier being, as it were, poverty-stricken, will have little of that energy, spirit of enterprise, and exertion, which are necessary towards ensuring success in all attempts towards improvement; the necessary expenses towards which are only to be borne by those in easy circumstances, and which will seldom be the case with tenants at rack-rent on poor land. The next step towards improving stock, after providing for them the best keep circumstances will admit, is certainly by a selection of breeding stock; but this must be done by degrees, for the pecuniary circumstances of but few, will admit of a total change. How much soever they may disapprove of what they have in possession, they can only object to a few of the inferior: this, however, is in their power, and by always selecting the best for breeding and rearing, improvement will in time be effected. Great improvements in cow-stock are doubtless to be made by a proper-selection of the best heifers in carcass and milk-bag for breeding stock, but more particularly by a judicious choice of the bull; a principal mode to improve the stock on a farm. As what is called prime or first-rate stock is in but few hands, and the owners generally ask higher prices than farmers in general can afford to give, it would certainly be a laudable effort, if the owners of estates, by themselves or their stewards, would procure first-rate male animals for the best stock only, of their tenants and neighbourhood, even if so much a-head were paid as would indemnify the expense; or if encouragement could be given by any public measure, by bounties, &c. &c. under the direction of the Board, for keeping the better sorts of each in regular districts, it would be a salutary plan, and might have a tendency to the improvement of live stock; and it is only by some such, or similar efforts, that the highest improvement to which live stock is capable of being brought, can be accelerated and effected.

SECT. II.—SHEEP.

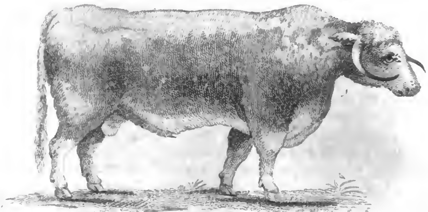
The distinct native breeds of sheep of the county of Stafford are as follow:

First, the grey-faced without horns, with fine or clothing wool. Secondly, the black-faced horned, with fine wool. Thirdly, the white-faced without horns, with long or combing wool. Fourthly, the mixed, common, or waste land breeds. Fifthly, the pasture sheep, of different breeds and crosses.

First, the grey-faced without horns, are the native breed of Cannock-heath, Sutton Coldfield, and the neighbouring commons. The distinguishing characteristics of this breed are in general, grey faces, lighter or darker, varying from white to black, with all the shades of colour between. The legs of the same colour with the face. The wool fine, closely and compactly covering the carcass, without horns, and of a moderate size. Those from a sound part of the walk, and from a managing master, have a good disposition to fatten, and produce mutton at the table equal to that of any breed in the kingdom. The better breed of these sheep very much resembles the breed of the South Down, and are, doubtless, originally from the same common stock; and perhaps the superiority of the South Down to some of the best Cannock-heath and Sutton Coldfield flocks is very questionable, and cannot readily be admitted. The general fault of this breed has been the want of thickness in proportion to their length. Sir Edward Littleton, with a patriotism and public spirit highly commendable, has for several years back been setting the example of improving

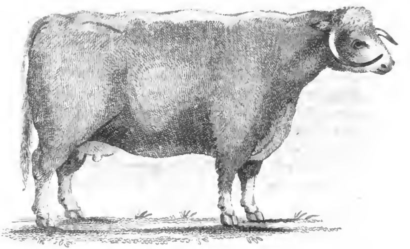
Staffordshire Bull.

Sr. E. Littn. Bart. Owner – 2 Years old 1795



Staffordshire Cow

T. Miller Dunstall, near Wolverhampton, Owner.



Stringer delt. 1795.

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ing this breed, by crossing with Ross rams; by which the carcass has not only been thickened, improved in form, and increased in weight, but the wool improved in a very high degree, so much that his wool of 1792 was sold (as I was assured by Mr. Hall the steward) at twenty-four shillings the stone of fourteen pounds; that of 1793, and of the present year, 1794, remaining unsold. They are now, June 9, washing the sheep in preparation for this year's shearing, and some of the neighbouring flocks are sheared.

Mr. Hall believes he could sell the two years' wool at twenty-one shillings the stone, which is eighteen-pence per pound, though fourteen per cent. less than the last price. Sir Edward's flock consists of several hundreds of sheep: the ewes fatten from twelve to sixteen pounds the quarter, and the wethers from sixteen to twenty pounds. Many of Sir Edward's tenants have pretty closely followed his example, and much improved their flocks by a careful selection of rams. The number of sheep kept on this side Cannock-heath is very considerable; the common being now in many places perfectly whitened with them. It is to be remarked, that this side of the common is amongst the best of the whole walk of 25,000 acres. The soil sound, and of a pretty good staple, the herbage tolerably good in the open spaces; and less encumbered with heath and rubbish than most other parts of this waste. Respecting disposition to fatten*, there is no reason to believe the sheep here inferior to any other breed; the ewes and lambs are often taken into pasture early in the spring, when, if sound sheep, every lamb will go to the butcher, and every sheep follow in the course of the summer. A few years back I bought a lot of ewes and lambs at Cannock fair, unshorn, May 8, at nineteen shillings per couple, every lamb of which was sold to the butcher before Midsummer at from twelve to fourteen shillings; and the ewes might have followed about Michaelmas, but, for the sake of advance in mutton, were kept in turnips till January following, and sold at a guinea each, which is a profit not more than common. These sheep, which, kept in pastures, and crossed with strong rams, make the pasture-sheep-stock of many farmers in this county, are very strong sheep, and are preferred by their owners to the Leicester breed; but I think the improved Leicester breed much superior, and that they should have the preference from all such farmers as have no common right; but the native breed crossed, thickened, and improved by degrees, will probably be much superior, and better adapted to the walk, than any thing that could be effected by a total change of breed: and that the native breed is capable of being improved, is already demonstrated by the successful attempts here of Sir Edward Littleton, and some of his tenants and neighbours, and on Sutton Coldfield by those of Mr. Fowler, and others. If any gentleman who is a stranger to this country, should wish to have an idea by ocular examination of the sheep of these commons, he should by no means trust to a chance ride upon the wastes, where perhaps he may meet only with the breed of the last century, the property of slovens, who never gave themselves the trouble of a moment's consideration about improving their flock; but should inquire for some respectable sheep-master. It is farther to be observed, that much the best sheep-land on this common, is on the west side, towards Teddesley, and on the north, towards Rudgeley and Beaudesert, in which the neighbourhood of Hedgford must also be included; large tracts of the south and east parts being cold, barren, and wet, in want of draining, and covered with little but heath, whortleberries, lichens, and mosses.

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* Sheep are known to fatten in proportion to their compact shape, and quietness in pasture.—*S.*

Sir Edward Littleton, in a letter to me, says, "Teddesley sheep, and Cannock-wood sheep have nothing to do with each other, but are distinct breeds;" they are however from the same origin, being the better sort of Cannock-wood sheep, improved by crossing with a finer woolled, and a finer boned breed; and resemble in many particulars of form and appearance the South Down sheep, with the advantage of carrying a finer and better staple of wool.

By an act of 13 Geo. III. chap. 81, sect. 21, after taking notice, that the improvement of the breed of sheep is a matter of great national importance, and the turning of rams upon wastes, and open common fields at certain times of the year, has been found very prejudicial, it is enacted, That no ram shall be turned upon, or be suffered to remain upon any waste or common field, between the 25th of August and the 25th of November, every year. This rule is observed upon Teddesley commons, Sir Edward Littleton's.

The Sutton Coldfield sheep are doubtless from the same original common stock with those of Cannock-heath, but have been pushed to a larger size and weight. Mr. Fowler of Erdington, who, though in Warwickshire, is very near the borders of this county, and summers several hundreds on the Coldfield in either county promiscuously, was so kind as to shew me his own and his neighbours' flocks. His rams are stout, broad-backed, wide on the rump, and well made, with fine wool to the very breech: the largest of them would, I believe, fatten to more than thirty pounds the quarter; and the smallest would be considerably more than twenty. Great attention has been paid for several years past to improving this breed both in wool and carcass, and the principal farmers have endeavoured to excel each other in these particulars.

Mr. Fowler thinks the breed is now pushed rather too far in bulk and weight, for the pasturage of the common, or even of the neighbourhood, unless they are driven into better land for fatting. The following particulars he gives me.

" In general, the ewes will weigh when fat, from fourteen to eighteen pounds the quarter, and the wethers from fifteen to twenty, and sometimes much more. About two years since, I had a true Coldfield-breed wether sheep which weighed thirty-two pounds per quarter. About eleven years since I turned, as usual, about the first week in May, my ewes and lambs to the common: in August I took the lambs from the ewes, and kept them in the enclosures about fourteen days; afterwards I turned forty of my wether lambs to the common again, and kept them there winter and summer, without ever putting them to any other keep, some of which I sold with other Coldfield sheep at nine years old, for 47*s.* each: their chief support in winter was on heath or ling.

" The average price of wool for the last seven years, which I have sold, is 33*s.* 8*d.* per tod of thirty pounds, and I think the average weight per fleece is three pounds each.

" I think about 11,000 sheep are kept in summer on that part of Sutton Coldfield which is in Staffordshire, and which contains about 6500 acres. Many more might be kept, if the rabbits, now in abundance upon about 1500 acres of this common, were destroyed.

"RICHARD FOWLER."

Mr. Fowler is clearly of opinion, that pushing or increasing the size or bulk of sheep, by improving their pasturage, or removing them to a better pasture, does not at all tend to injure the staple, or degenerate the fineness of clothing wool, provided due attention be paid to selecting the finest-woolled rams.

I have farther to observe, that Sutton Coldfield is but a barren sheep-walk; containing in some large tracts scarcely any other plant than heath; in other places, fern, gorse, whortleberries, and rushes, with grasses in small proportion.

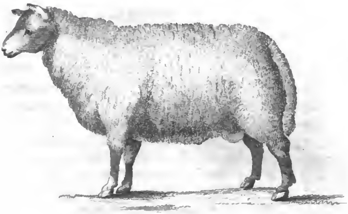
Secondly, the black-faced horned sheep, with fine wool, are peculiar to the commons on the west of the county, towards Drayton, in Shropshire, particularly Maer-heath, Ashley-common, and the other wastes in that neighbourhood. They have black and rather long legs; are light in the carcass: the rams are horned, and have been bred, I apprehend, with little attention, and are certainly capable of great improvement, especially in the thickness and form of the carcass. I think them, in their present state, much inferior to the grey-faced polled last described; their walk, with the herbage thereon, is, however, poor, and ranks with the worst parts of the commons before-mentioned.

Thirdly, the white-faced polled, with longer combing wool, considered as occupying waste or unimproved land, are peculiar to the east parts of the Moorlands. Upon the calcareous or limestone bottom, they are strong heavy sheep, and, I think, the most valuable and best sheep on waste land in the county: inferior to the New Leicester, as being much heavier in the bone, and coarser in make; but, by proper crossing with well-made rams, may be improved into an excellent breed of sheep.

Fourthly, the mixed common or waste-land breed, consists of the sheep upon the wastes, or upon the uncultivated enclosures in the west part of the Moorlands, and on the grit or gravel bottom. These are much inferior to those on the limestone or calcareous ground, and are, indeed, of a very different breed. These appear to have originated from the ancient breed of the Moorlands, continued without attention, and have some white, and some grey or dark faces, with legs generally of the same colour: some with, and some without, horns: the wool too coarse to be called clothing, and too short for combing wool. The walk on this west part is inferior to the other, as being in part composed of peat moors, on which sheep are, doubtless, subject to rot. The breed is, nevertheless, capable of being much improved by attention in selecting rams, which appears to have been, in a great measure, neglected.

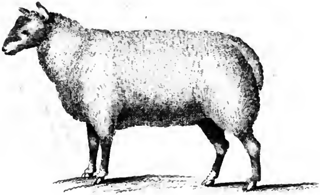
In the mixed breed, too, may be included the sheep upon the walks and commons in the south of the county, as on Clent-hills, the commons near Stourton, Swindon, and Wombourn, Kinver Edge, &c. the sheep on which are a mixed breed, not deserving commendation; apparently bred with little attention, with faces of all colours, white, grey, and black; some with, and some without, horns: the wool is tolerably fine, and of the clothing sort. Some of the rams have large horns, as heavy as their heads; and even the young

Cannock Heath Ram.



Cannock Heath Ewe.

Sir E.L. Bar.t Owner.



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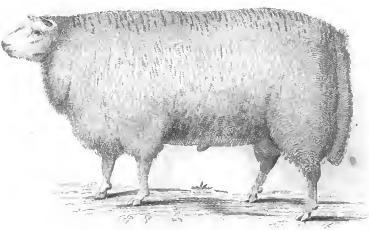
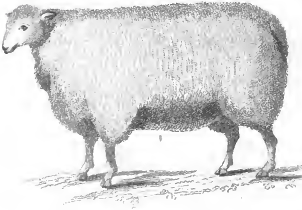
2nd

Staffordshire Ram & Ewe,
bred from the new Leicester.



Presented by R.Dyott Esq.^{r} his property.



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young lambs often have a strong horn growing with great luxuriance. This propensity to large heavy horns ought, I think, to be condemned. A heavy horn doubtless requires nourishment from food, as well as the carcass, and when full grown is of no value. If sheep are to be bred with horns, the horns should be fine and slender, and rams with such only selected. But I must confess myself partial to sheep without horns; for I conceive a sheep's horns to be of no service whatsoever, even for defence; and so far from ornamental, that the animal appears handsomer without them.

Fifthly, amongst the pasture flocks of different breeds and crosses, in regular flocks, or as stock yearly changed, I first name the Leicestershire breed, of which there are many regular flocks in different parts of the county. They may be divided into two sorts—the Old and New Leicester breeds. The Old Leicesters are well known as large, thick, heavy sheep, with long combing wool; the New Leicester breed is a refinement upon the Old, by crossing with a finer-boned and finer-woolled ram. These are now established in various parts of the county, and increasing in other places. The Old Leicester breeds are crossing with the New, which bids fair to produce a very good breed; there being many instances in which the old breed were become too coarse, and the new too fine. Amongst the Leicester flocks that I have seen or examined in this county, I shall notice the following, rather in the order in which I have seen them, than from any other reason. Mr. Princep's flock, which I saw in the field, and also under the hands of the shearer, are of the New Leicester breed, and very choice. The flock of Richard Dyott, Esq. of Freeford, near Lichfield, is closely bred from the New Leicester breed, by means of rams for many years procured from Mr. Green, of Normanton, near Ashby de la Zouch. Mr. Dyott's farming is upon a considerable scale, to the extent of 800 acres, or more; and the main object, sheep. His flock of breeding ewes is 200, and he never sells a lamb, upon the average rearing about 300. Mr. Dyott himself informed me, that his annual sales from sheep and wool amount, upon an average, to 650*l.*; that his sheer hogs, or yearling wethers, generally go to the butcher at two guineas each; and the culls of this age make 35*s.* each, and, by keeping to the month of February following, has sometimes sold them at 50*s.* each, being then less than two years old. This is a proof, that this breed of sheep will make a profitable and quick return into the farmer's pocket. He has several times killed sheep when kept to a greater age, that have weighed 40lb. per quarter. Connected with this sheep system is that of turnips, for their winter support, of which Mr. Dyott grows regularly a breadth of 70 acres; they are well hoed and cleaned, and followed by barley with seeds. Some other flocks, belonging to Lord Bagot's tenants, I saw and examined, particularly some belonging to Mr. Harvey, his Lordship's steward. This breed, introduced into this neighbourhood a few years back, is gaining ground fast, and is supposed by many, with whom I am disposed to concur, to be the best pasture sheep-stock in the kingdom. The superiority consists, or is supposed to consist, in this: that the pastures may be stocked much harder with these, than with any other stock of equal weight, as they are always fat, even when suckling lambs. Some very good rams of this breed, worth from five to ten guineas, either to purchase or hire, are on Lord Bagot's estate, and in the neighbourhood, particularly in the hands of Mr. Harvey and his brother. The ewes, full grown, will weigh from 20 to 25 lb. per quarter; wethers at two years old, at which age they generally go off, about the same; but when kept another year, they will rise to 30 lb. per quarter, and in some cases to 40. Mr. Princep has raised them to 52 lb. to the quarter. The fleeces weigh from 7 to 10 lb. The price of wool for the two last years has fallen from 1*s.* to 8*d.* per pound; the present price does not exceed 8*d.** I have observed this year, that the lambs from a ram of this breed, were lambed much easier than many others, particularly than those from a ram of the Old Leicester breed the preceding year. This fact is well known to every one acquainted with my flock: the lambs of 1793 were very generally obliged to be drawn away by force from the ewes. The lambs of 1794 from the same ewes, were produced as generally without any assistance: the ewes were in equal condition in 1794 as in 1793. I attribute this chiefly, or wholly, to the form, as the ram is finer in the neck and shoulders than a coarse made sheep.

These sheep, as well as I can describe them in words, are fine and light in the bone, thick and plump in the carcass, broad across the loin, with the back bone well covered; not rising into a ridge, but sinking in a nick, and, as it were, a double chine of mutton rising on either side: fine and clean in the neck and shoulder; not too short in the leg, and of a sufficient bulk in the carcass to rise to the weight above-mentioned; which bulk in this breed will be apparently less than in any other.

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* The price of combing wool has risen gradually, from 1796 to 1803, from 8*d.* to 1*s.* 2*d.* per pound.

Many other crosses of sheep, of considerable merit, are to be found in the pastures of different farmers; and perhaps the great superiority of this, or of any breed over all others, has been over-rated by those who have made the comparison. The difference in natural ability and attention of different sheep-masters cannot be supposed so great, as to influence the result of their endeavours in a manner so very superior. Accidental causes may have first raised the attention of those who, by assiduity, have since contrived to keep the lead. But others will closely press upon them; and as the different breeds of sheep are but different varieties of the same species, to record the idea, that any one individual has carried his breed of sheep to a pitch of excellence so much superior to all others, is a libel upon all other sheep-masters. This idea strikes me more forcibly, since taking an extensive, yet particular, view of the sheep of this county, I have found distinct breeds, each having its peculiar merit; so that it is not very easy to decide the superiority. He who begins with a good breed, has, doubtless, an advantage; but I believe no breed has yet arrived at its *ne plus ultra* of perfection, but remains to be improved upon by future attention. Mr. Bradburne's remark pleases me much, when he says, "great advantages would result from an increase and improvement in the breed of sheep;" because his own are now of the most valuable Leicester kind, yet he thinks them capable of great improvement. My neighbour, Mr. Corser, of Bushbury-hall, has raised a new breed, by ingrafting the Wiltshire length upon the Cotteswold thickness; and has since removed the Wiltshire horn, by crossing with a well-bred ram without horns; the production from which is a beautiful well-made sheep, free from horns, and of considerable weight; and which would, I think, be made equal to any breed I have seen, by giving them another cross from a thick well-made ram without horns. The Cotteswold, or Gloucestershire, are kept by some, and much admired in this country. The Wiltshires, crossed by a heavy ram, have produced sheep, at little more than two years old, of 40 pounds per quarter, and which have been sold to the butcher at 3*l.* 10*s.* each. The Dorsets* have often answered well here, and are, in the opinion of some experienced farmers, equal to any other breed; and the fact is, that any breed of sheep, if sound and healthy, may be enlarged and improved by good keeping, and by crossing with rams selected with due attention.

Great attention has been paid, within the last seven years, by many respectable sheep-masters in this neighbourhood, to the improvement of their sheep, and improved flocks of Leicestershire sheep are not now uncommon here. But Mr. Miller, of Dunstall, near Wolverhampton, has, with great spirit, outdone every competitor; and, by crossing several years successively with first-rate Leicester rams, procured from Dishley, and from Messrs. Green, Farrow, Stone, and Buckley, at from 50 to 200 guineas each, as well as by purchasing ewes up to ten and twelve guineas each, has raised his flock to the first-rate New Leicester blood; and he is now the most considerable ram-letter of this district, having in his possession 40 rams, which he letts out for the season at from five to fifty guineas each.

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* They are a well-made compact breed, and lamb early, according as they are put to the tup: they pay well, even in the northern counties, when bought in after the blissoming season; the lambs killed off at Christmas (or soon after), and the ewes will be fat at the Michaelmas following.—*S.*

In this populous manufacturing country, the considerable demand for lamb*, as well as mutton, has induced a great proportion of farmers to keep none other than an annual stock of sheep, consisting of ewes bought in at Michaelmas, from Cannock-heath, Sutton Coldfield, the commons of Shropshire, and sometimes even from Gloucestershire, Wiltshire, and Dorsetshire. These ewes are immediately put to a ram, and the lambs in spring suckled till they are fit for the butcher; they are then sold, and the ewes kept in good pasture, fatted, and sold after them, and the whole flock generally cleared off within the year. And many people think the profits in this are equal to those in any other way: the lamb and wool will generally pay the original purchase of the ewe, and sometimes more; and the price of the fat ewe remains for keeping and profit.

SPANISH SHEEP, AND MR. TOLLET'S FLOCK.

In addition to the account of sheep, I have now to add the particulars of Mr. Tollet's flock, of Swinnerton-hall, Staffordshire, who has, with great industry and perseverance, raised from a small number of the true Merino breed, a large flock of fine-woolled sheep. He has procured Spanish sheep from His Majesty's flock, from Lord Somerville, and from other quarters, the breed of which he has kept distinct, as far as it goes; but to increase his flock, he has put Spanish rams to

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* I hope that demand will be lessened, and that for veal also, by Government making a law, that no ewe lamb or cow calf should be killed, unless stock be plentiful.

South Down and Ryeland ewes, the latter originally from the Ross (Hereford) breed, so well known for its fine staple of wool. The last season (autumn, 1804), Mr. Tollet had 414 fine-woolled ewes put to real Spanish rams, and his shearing the present season (June, 1805) included 730 fine-woolled sheep.

At shearing, June 6, 1803, Mr. Tollet, then resident in Gloucestershire, had a Merino flock, consisting of 21 ewes and 2 rams of the full blood; 19 shearlings and 2 rams, half Spanish and half Ryeland; 7 shearlings and 2 rams, half Spanish and half South Down. The Merino sheep were shorn unwashed, and produced as follows:

	lb.	oz.
24 Merino ewe fleeces, ...	130	10
Merino ram fleece, No. 1, ...	9	9
Ditto, No. 2, ...	11	12
Total, ...	151	15

No. 2 was a shearling ram; the fleece brought upwards of 35*s*. He was the son of No. 1, out of a ewe No. 1, both of which Mr. Tollet had, in the year 1801, through the favour of Sir Joseph Banks, from His Majesty's flock. He was yeaned May 13, 1802, and not quite 13 months old at shear-day: he was then judged to be at least 20lb. per quarter, and his carcass allowed to be very superior to the generality of Merinos. Mr. Tollet was then offered 200 guineas for him, or 100 guineas for the season for the use of him; both of which offers were declined.

The half-bred sheep had all been shorn when lambs, and were washed before shearing in the usual manner; they produced as follows:

Half Spanish, half South Down.

	lb.	*oz.*
7 shearling fleeces, ...	23	11
2 shearling rams, ...	9	9
	33	4

Half Spanish, half Rycland.

	lb.	*oz.*
19 shearling fleeces, ...	61	8
2 shearling rams, ...	8	1
	69	9

Average weight of the former, 3lb. 11oz.; of the latter, 3lb. 4oz.; general average, 3lb. 7oz. nearly.

The unwashed Merino wool was put in the hands of the manufacturers, and divided, according to the Spanish method, into four sorts, viz. R, or superfine; F (fine); T (thirds); and K, locks, or list.

The 26 Merino fleeces (gross weight, 151lb. 15oz.) produced as follows, having been divided into two lots:

	lb.		*lb.*		*s.*	*d.*	*£.*	*s.*	*d.*
Lot 1. R,	45½	scoured to the state of Spanish wool of commerce, produced - -	25½	at	6	3	7	19	4
F and T,	9½	ditto, - - -	3¾	at	5	0	0	18	9
K and list,	1½	ditto, - - -	0½	at	4	0	0	2	0
Lot 2. R,	81½	ditto, - - -	45½	at	6	0	13	13	0
F and T,	18	ditto, - - -	7¼	at	4	10½	1	15	4
K,	0½	ditto, - . -	0¼	at	3	10	0	0	11
26 fleeces, weight,	151½	produced - - -	82¾	amount,			£.24	9	4

Average amount of each fleece, 18*s.* 10*d.* nearly.

The Spanish and Ryeland wool of the first cross, was reduced to the merchantable state of the best Hereford wools, and produced as follows:

	lb.	oz.			lb.		s.	d.		£.	s.	d.
21 fleeces,	69	9,	produced,	first sort,	27½	at	4	2		5	14	7
				Second sort,	29	at	3	0		4	7	0
				Third sort,	2½	at	1	6		0	3	4
21 fleeces,	69	9,	reduced to	- -	59				amount,	£.10	4	11

Amount upon the gross weight, 3*s*. per pound nearly; and average per fleece, 9*s*. 9*d*.

Mr. Tollet states the average value of his English wool the same year to have been, per fleece, 4*s*. 6*d*. These particulars are extracted from the Annals of Agriculture, No. 243, where they are detailed more at large.

In the same work, No. 256, Mr. Tollet has detailed particulars of his shearing, June 6, 1804, from which I extract the following particulars:

	Unwashed Wool lb.
16 rams of the pure Merino blood, produced	130
32 ewes ditto, ...	191¾
8 shearling ditto, ...	34¾
	356½

This wool Mr. Tollet states to have been sent to the same intelligent and accurate friend as before, divided into superfine, fine, thirds, and list; it produced:

	lb.
Superfine, ...	281
Fine and thirds, ...	70
List, ...	5½

Reduced to the state in which Spanish wool is imported, it produced as follows:

	lb.		*s.*	*d.*		*£.*	*s.*	*d.*
Superfine, ...	148	at	6	4	....	46	17	4
Fine and thirds, ..	34	at	5	3	....	8	18	6
List, ...	2	at	2	6	....	0	5	0
Amount of 56 Merino fleeces, ...						£.56	0	10

On the following day the mixed breed were shorn, consisting of

18 two-shear ewes,
25 shearling ditto,
11 two-shear wethers,
8 shearling ditto,

Total, ... 62 fleeces.

This wool had been washed on the sheep's back in the usual manner. The weight was 219¼ lb.; average, 3½ lb. per fleece: this yielded of scoured wool as follows:

	lb.		*s.*	*d.*		*£.*	*s.*	*d.*
Superfine, ...	129	at	4	9	....	30	12	9
Fine and thirds, ..	47	at	3	9	....	8	16	3
List, ...	2	at	1	6	....	0	3	0
Produce of 62 fleeces, ...						£.39	12	0

Average value of the Merino fleeces, upwards of 20*s.* each; of the mixed breed, upwards of 12*s.* 8*d.* each: the latter bred from ewes whose fleeces are of the average value of 4*s.* 6*d.* each.

I have, during the last and present month (June and

July, 1805), paid two visits to Swinnerton-hall, Staffordshire, which is now the residence of George Tollet, Esq.; once in company with a very intelligent friend and neighbour (Mr. Miller), and once by myself; and have seen and minutely examined the farming premises, the live stock, and produce. The following is the result of the sheep-shearing 1805:

65 Merino sheep; 60 of them were washed in the usual way, and 5 shorn unwashed.

	lb.	oz.
5 rams washed, produced, ...	37	0
5 cut ditto, at one year old, ...	31	10
10 shearling ditto, shorn when lambs,	50	14
40 ewes, ...	156	4
60 fleeces, ... lb.	275	12

	£.	s.	d.
Sold without sorting, at 4*s*. 3*d*. per lb.	58	12	0
5 rams unwashed, produced 51 lb. 7 oz. sold at 3*s*. 2*d*.	8	2	10
Produce of 65 Merino fleeces, ... £.	66	14	10

Average, 1*l*. 6*d*. each, and upwards.

	lb.	oz.		s.	d.	£.	s.	d.
Largest washed fleece,	9	10	at	4	3	2	0	10½
Largest unwashed ditto,	12	4	at	3	2	1	18	9½

Part of the ewes were shearlings, which had been shorn when lambs. Mr. Tollet intends to decline shearing his lambs in future.

The mixed breed were washed in the usual way, and the wool is sold without sorting, at 3*s*. 3*d*. per pound. Of them, six wethers produced 32lb. 10oz. at 3*s*. 3*d*. —5*l*. 6*d*. Average weight, 5lb. 7oz.; amount, 17*s*. 8*d*.

per fleece. Five wethers produced 24lb. 6oz. at 3s. 3d.—3l. 19s. 2d. Average weight, 4lb. 14oz.; value, 15s. 10d. per fleece.

Between 200 and 300 shearlings having been shorn as lambs, produced an average of 3½lb. each, at 3s. 3d. or 11s. 4½d. per fleece.

Average value of the fleeces of the native uncrossed breed, as usual, under 5s. each.

Mr. Tollet has made a few experiments of this superfine wool acquiring length, by growing on the sheep's back more years than one, which may be done without endangering the animal; and he has this season left a few fleeces unshorn, to continue the experiment.

A ewe fleece, pure Merino, two years' growth, average length of the staple, 10 inches; shorn 1804:—manufacturer's opinion, that it was the finest long wool ever seen; has been manufactured into a shawl (which is now at Swinnerton), of extreme fineness and delicacy of texture.

A wether fleece, half Spanish, half South Down, three years' growth, was exhibited by Mr. Tollet this season at Holkham, on the sheep's back, and there shorn; weight 13¾lb.; besides which, 1¼lb. at least, was supposed to have been lost in specimens, making 15lb.; pronounced by the manufacturers worth any thing, if it succeeds in their hands as may be expected. 7s. 6d. per pound was named; and it was observed, that the price of the raw material was scarcely an object where extraordinary products might arise. This fleece is now in the hands of a manufacturer for experiment.

Mr. Tollet's flock is now of that extent, that he will require nine Spanish rams for his own use: one he has engaged to Mr. Coke, of Norfolk; several to other gentlemen, and he has now a few at liberty.

Respecting the tendency of this and similar experiments, I am of opinion, that it embraces a great national object; as I consider the increase of fine clothing wool, independent of individual profit or advantage, to be a matter of considerable political importance, as tending to improve, increase, and advance, a manufacture which has always been considered as the staple trade of the nation.

The great merit of the Spanish fleece consists not in its fineness alone, but in its extraordinary weight when considered as fine wool, it being considerably more than double the weight per fleece of any of the fine British wools; and a considerable increase of weight being the immediate consequence of a Spanish cross upon any of our fine-woolled breeds, as well as an improvement in the staple. This great increase in the quantity and quality of clothing wool, may therefore be considered as the means of attaining a great national object, by which the importation of Spanish wool may be lessened, or rendered unnecessary; the money expended in that branch of commerce kept at home, or employed to more advantageous purposes; the quantity of fine wool increased, and the staple trade and manufacture of the kingdom extended, which must ultimately tend to increase the prosperity of the empire.

And there is great reason, from every appearance, to conclude, that this breed of sheep may, so soon as they are in sufficient numbers for selection, be brought to produce as much mutton per acre as the average of our fine-woolled sheep, and at the same time a double quantity of wool, and of superior quality.

Respecting the present state of this breed for carcass and appearance, my neighbour, Mr. Miller (who has a large flock of prime New Leicester sheep), laughs at the large twirling horn of the Spanish rams, which he thinks disfigures the sheep; this, however, is growing less in some of the younger bred ones, and, in some instances, the horn has disappeared, and may doubtless by degrees be done away by selection, the ewes being hornless; though Mr. Tollet thinks this rather a matter of taste than of real utility: the form of the sheep is evidently improving by crossing, and may be still more so by selection, as their numbers increase.

Mr. Tollet observes, that in Spain, the fleece has been every thing, the carcass nothing; nearly all the males of their immense flocks, some of which are said to consist of 60,000 sheep, are kept unmutilated, because in that state they produce more wool, and these are admitted to a promiscuous copulation: how, then, can we wonder at the unsightly state of the carcass in many of the individuals of this race?

If an acre of middling pasture land would carry only four Merino sheep, even this, at the present value of the wool (1*l.* 6*d.* per fleece), would be 4*l.* 2*s.* per acre for wool only.

Mr. Tollet believes, that there is not the least risk of the Spanish wool degenerating in this country; and that the superiority of Spain in its wool, has originated solely from its being, in modern times, exclusively in possession of the pure race of Tarentine sheep; and that the Merinos may be traced very satisfactorily to the Tarentine stock, vide Columella, lib. vii. cap. 2; and further, that there may be a probability of even improving the Spanish wools in this country, from superior care, and a more even temperature of climate.

Respecting quality of mutton, the evidence of Mr. Giblet, of Bond-street, who has slaughtered eleven of his Majesty's Spanish wethers, is expressly in its favour;

and the mutton of the mixed breed is equal to that of any of our native breeds.

Respecting cow-stock, Mr. Tollet is partial to the Devons, which he has entirely adopted; and after one team of horses to each farm, for the road and heavy work, does the rest of his farm business with Devonshire oxen, which he thinks, in point of agility, exceed all others. He grows various kinds of green crops, but prefers to all others the Swedish turnip transplanted; of which he has this year twelve acres, besides one acre broad-cast; they are planted on two-furrow ridges, in rows two foot asunder, and a little more than one foot in the row, making four plants upon a square yard, or 19,360 upon an acre; the seed sown upon a seed-bed in March and April, and planted out in June; the land manured with dung from the farm-yard. The planting costs 9*s.* per acre; the hoeing done in part by the plough, is finished by hand, and costs much less than if sown broad-cast. The Swinnerton soil is far from being what is called a true turnip soil; it is inclined to a strong gravelly loam.

Mr. Tollet gave me the following particulars of his farming occupation and stock:

Land in hand, including a farm at a few miles distant,	480 acres.
Wheat,	34
Barley,	10
Oats,	54
Pease and vetches,	5
Green crops,	54
Wheat fallow,	6
Mown for hay*, I suppose	100
Which leaves pasture,	217
	480

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* Forgot to inquire the exact quantity mown.

Stock on two farms.

12 waggon-horses.
6 hackneys and coach-horses.
1 brood-mare.
4 colts.
1 mule.
10 draught oxen.
1 bull, Devonshire.
14 Devon cows.
11 young cattle.
9 rearing calves.
800 fine woolled sheep.
413 lambs by Spanish rams.

It is extremely difficult to apportion this stock, so as to say what number of sheep are kept upon an acre; I however attempt the following division of it, which any one may alter and correct to his own opinion.

I suppose the sheep, including green crops, and grazing in aftermath, and stubbles, to occupy one-half of the farm: this, including lambs, which are now (July 16) weaned and grazing as sheep, and will produce each a fleece of wool at a year old, gives 1213 upon 240 acres, or five upon an acre and upwards.

I suppose 20, for twenty young cattle.
50, for fifteen grown cattle, one mule, and four colts, at two acres and a half per head for summer and winter keep, no corn included.
20, for ten draught oxen, two acres per head.
57, for nineteen horses (besides corn), three acres per head.
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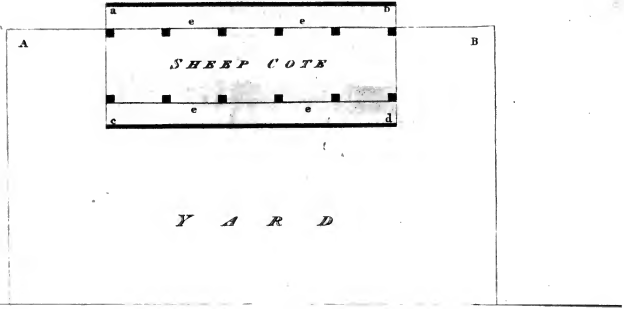
387, leaving 93 acres, for crops and fallow,

Mr. Tollett's Sheep Cote.



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low, which really occupy 109 acres. The difference of sixteen acres I allow for grazing in stubbles.

Mr. Tollet has constructed a sheep-cote, which, as it possesses great merit in point of convenience and economy, I give a sketch of.

The Spanish sheep are driven into the open yard at night, when near lambing, which is well littered with straw; the shepherd selects out such as he supposes may lamb in the night, and puts them in the cote, which is also littered, and the ends may be closed with hurdles, with which the cote may also be divided at pleasure. This cote is also ready at shearing time, and for other purposes.

The disorders to which sheep are most subject in this county are, the rot, the scab, the foot-rot, and striking or dying in the blood. Respecting the rot, it is generally supposed to be occasioned by feeding on wet lands. We have had proposals, by advertisement in the public papers, for curing this disorder; but I cannot find by any well authenticated account, that any specific for the cure has yet established its character upon the basis of experiment. The few opinions which I have received respecting the cause and cure of the rot, are as follow.

The Rev. Mr. Wright tells me, that "the rot is supposed to be occasioned by the wetness of the season, more than by the nature of the soil on which the sheep are depastured."

Mr. Webb says, that "sheep are most subject to rot on low flat grounds affected by land floods. But possibly the rot may be occasioned by the licking up of some insect or egg that is frequent on low wet lands;

yet I have known sheep kept upon wet meadows that are subject to floods, without injury."

He knows of no means used to prevent the rot in sheep, except draining the land.

Mr. Bradburne's account states, that "common fields and waste lands, from the diversity of situation, heavy rains flowing from the ploughed to the low damp parts that are not tilled, gross vapours that exhale from damp lands, are amongst the causes of the rot. Old sward, where the surface-water remains long on the land, is most fatal to sheep."

He has been successful upon lands subject to rot sheep, by a plentiful use of lime, and in laying the land in a form for the rain water to pass off quick.

Mr. Miller's opinion is, that "the lands most liable to rot sheep, are wet and low lands, and loose; where sheep pull up the grass by the roots, and are obliged to eat the dirt with it. But sheep rotted in the winter of 1793 upon most sorts of land, owing to constant wet, which produced more worm-castings than usual, and occasioned the grass to be always dirty by over trampling it.

"The only remedy is under-draining, to make the land sound and dry."

Mr. Bache, who has had much experience on the subject, thinks the rot in sheep is owing to "wet seasons, and to a putrid or unkindly state of the air and herbage on wet lands in such seasons. He mentions a soft spongy grass which he conceives has a tendency to produce the rot, and which grass I understand to be of the *carex* or sedge-grass tribe, and which indeed grows mostly on wet lands; and advises that in wet unkindly seasons sheep should be removed to dry lands."

The scab is a very troublesome disorder, and when got to any considerable height, requires a good deal of pains and attention to cure. It may be effected by perseverance in applying decoctions of tobacco, turpentine, sulphur and verdigrise, or by mercurials*.

The foot-rot is cured by caustics, as quick-lime or butter of antimony, applied to the part affected.

The striking†, or dying in the blood, is a very serious complaint, and generally happens to sheep in a growing and fatting state, often in turnips in winter, or in clover in the spring season, and is, I suppose, of the apoplexy kind. I have heard of no remedy or preventative, and the only precaution used here, that I know of, is to look them over often, and kill them instantly when found seized with the complaint. But it often happens that they are dead, and the blood stagnant, before they are found; in which case the carcass is lost. If any sheep-master is acquainted with a preventative, the communication thereof would be a valuable service to the community. Bleeding has been recommended, but, not having been found effectual, is, I believe, but little practised.

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* The following receipt for the scab may be depended upon; it is far preferable to mercurials, which are always dangerous.

Take green broom, two good handfulls, tobacco, stone brimstone, saltpetre and baysalt, of each one pound, common salt two pounds, teribinthanated balsam of sulphur half a pound; boil all in five gallons of soft water for one hour. Rub a little on the parts affected.

† To prevent this complaint, bleed the sheep in the nostril, about three times, each spring, and give each three spoonfulls of salt and water, made rather strong. To young lambs, give one spoonfull to each. The above remedy to be applied at other seasons of the year, if necessary.—*T. Webb.*

N. B. The first bleeding, &c. should be in about a week after the sheep are put to good keep. The second about a fortnight, or three weeks after, &c. Ewes and lambs to be omitted, till the lambs are full three weeks old, but should not be kept too well, during that time.

SECT. III.—HORSES.

The draught breed of horses being those only whose use is applicable to agriculture, of the others I shall say nothing, and of these but little, as conceiving there is nothing very remarkable in our breed; though we have a sufficiency of good stout horses, for the use both of the carrier and the farmer. The colour is most generally black or brown, each being equally esteemed and equally useful; and, indeed, as the old proverb says, "a good horse is never of a bad colour," some valuable stallions are kept of each colour. But in respect to the breed of horses, I think this county must yield the palm to the neighbouring ones of Leicester and Derby; and indeed, breeding horses is by no means a main object here, and carried little farther than to supply the county, and also the neighbouring fairs with a few. There are some considerable shows or fairs, where a great number of excellent colts and horses are offered to sale, particularly at Stafford*, Burton, and Rudgeley.

HORSES, AND OXEN FOR DRAUGHT.

Horses for the purposes of agriculture, are almost universally used by the farmers in this county, and seem almost totally to have superseded the use of oxen, and are still gaining ground, and oxen at the plough are but very little used. The reason seems to be, the great superiority of horses as to dispatch, and with which a less number of servants will do the same business, than can possibly be done with oxen; and a number of servants being one of the heaviest of the farmer's expenses, horses are found upon the whole to do the business cheapest. This is by no means theory; for the experiment has been made by many farmers, who, if they had found it their interest, would certainly have given the preference to oxen. Amongst other large farmers, Mr. Lockley of Boscobel, who, though in Shropshire, lives on the borders of this county, persevered in the comparison for some length of time: the following is his opinion.

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* Two year old colts are sold at Stafford fair in great numbers, and with good profit to the farmer who breeds them; the poorer sort of lands in the Moorlands answer well for breeding; and a few acres of rich feeding land, on the banks of the Dove, pushes up the young stock surprizingly; they generally produce thirty pounds a pair or more at the fairs, at two years old; a very fair profit, and inducement to the farmer to attend to this discrimination of poor and rich land for the breed and improvement of his live stock.--*Rev. S. Shaw.*

"The land of this neighbourhood, and of Staffordshire in general, is a marl, and not well adapted for ox-teams; partially it may; and where the turnip or sandy land will admit their use, there cannot exist a doubt of their utility: they must work easy, or they cannot get on at all. And they appear to me best adapted to carting out manure. Six oxen are necessary upon the marl or wheat land in Staffordshire; nor will that sort of land always admit of a wheel-plough, attended only by one servant. Six oxen would work a two-furrow plough in the light turnip land: that alone is the soil to which they are adapted, and of which Staffordshire has but a small proportion.

"Oxen are as three to two, to horses upon light land, and as two to one upon strong; but oxen will not be even in that proportion, without an addition of keep and care in the winter."

I knew an instance some years back, of a capital farmer, upon light turnip land, who always recommended the use of oxen to others, but never used one himself, though the extent of his business was such as to find employment for near twenty horses.

Some few oxen are reared, and even fatted here, without being ever drawn: the owners think it more their interest to keep them at pasture; and they certainly should be, and doubtless are, the best judges of what is most likely to turn to their own advantage.

Sir Edward Littleton is the greatest master of draught oxen in the county. He has no less than eighteen employed in carting coal, gravel, his hay-harvest, or any thing else, wanted; but I believe not at all in ploughing*. They are drawn single in harness, geared exactly in the manner of horses, with the collars inverted, and open at bottom. Oxen for draught have been strongly recommended to the tenants; but very few, if any, are in use on the whole estate, except those kept by the landlord. I have no doubt but they would readily and gladly second the views of their landlord in this particular, were it at all compatible with their respective interests: but the land is mostly strong, and the few who have tried oxen have declined them. Oxen were formerly much more used in this country than at present. As a more extended and improved cultivation has taken place, and the price of human labour has increased, they have gradually given way to horses: agreeably to which idea I

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[*] In which, however, they certainly answer best: they will always prove profitable on large farms, or where muck is much wanted.

But when coals, lime, and other articles must be carted from any great distance, and only one team can be afforded, oxen will not answer; because they never can pay unless worked daily on the spot, and an industrious useful man is kept to attend them.—*S.*

still find oxen now most prevalent in backward countries; and more so in Wales than in England, where I have lately seen them in yokes, crawling at a rate so slow, that no farmer could bear to see it with patience. The fact is, that every attentive cultivator will do his business in the best and cheapest way he can; and he must be a much better judge of this question than any theorist can possibly be: and the single fact of horses being preferred, is a sufficient proof of their superiority. In a public point of view, perhaps, the difference is less than has been generally supposed; for were oxen kept for draught, instead of horses, though a farm might produce more beef, it would produce less cheese and butter, which last have generally of late been rather the scarcest articles.

SECT. IV.—HOGS.

THE breed of hogs most esteemed here, is not the large slouch-eared breed, but a cross between them and a smaller dwarf breed. They should be fine in the bone, thick and plump in the carcass, with a fine thin hide, and of a moderate size; large enough to fat, at from one, to two years old, to the weight of from three hundred to four hundred pounds each. These, if well bred, will keep themselves in good plight with little feeding, and will soon grow fat with a plentiful allowance of proper food. Hogs of the large breed have been fatted here, to from six hundred to eight hundred pounds weight, exclusive of the entrails; but, requiring much time and food, have pretty generally given way to a smaller-sized, finer-boned, thick, plump animal. Hogs are generally fatted here by farmers with the refuse of the dairy*, boiled potatoes, and barley meal, and pease either whole or ground: by millers with what they call sharps and gurgeons, that is, with the husk or bran of wheat ground down, but not wholly divested of its flour; also with other sorts of grain and pulse ground down; by butchers, with the refuse or offal of slaughtered animals. Bacon and pork are much eaten in this neighbourhood, and the consumption is very considerable, but supplied in part from Shropshire and North Wales.

SECT. V.—RABBITS.

Of the management or profits of rabbits, I know but little, though they are sufficiently abundant upon the sandy parts of waste land; in enclosed level land they are certainly no better than vermin, and should the commons be pretty generally enclosed, they must be in a great measure exterminated, to make way for a better stock (sheep); in enclosed land, they can only be kept with propriety, either in small warrens near the house, well fenced in, for family consumption; or on sandy or

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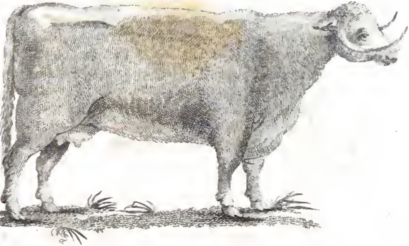
* The best way is to boil them in their own steam, and put them afterwards into a large oven when the bread is drawn, to evaporate the watery parts, they will then go nearly as far as chesnuts or acorns in feeding.—S.

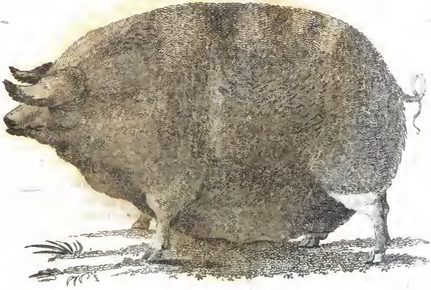
A few years ago, Mr. Dyott fatted a most remarkable hog, of which the following are the particulars. Two years and half old, three feet high, eight feet long, eight feet round, two feet wide across the back and shoulders; was killed December 20th, 1791, and weighed 22d, in the presence of the Marquis of Donegall, and several gentlemen; weight 40 score two pounds, or 802lb. leaf 73lb., head 43lb.

Staffordshire Cow; croſsed from Mr. Princep's breed.

Presented by R. Dyot Esqr. Owner.



Propy. of R. Dyott Esqr.



E. Stringer delt. 1795.

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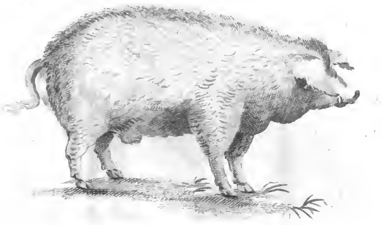
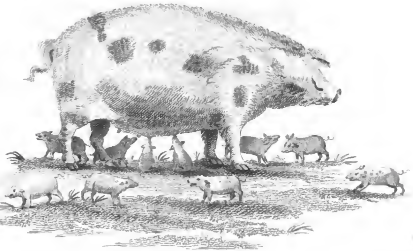
Staffordshire Boar;

T. Miller Dunstall, Owner.



Sow & ten Pigs, first Litter;

W. Pitt Pendeford Owner.



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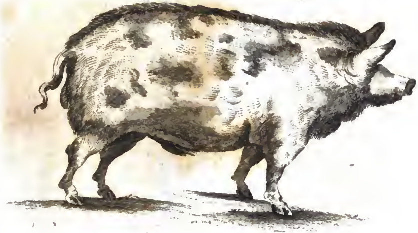
Staffordshire Boar;

Mr Richards, Pendeford, Owner



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rocky precipices, impracticable to the plough, where they should also be fenced in. I know in the neighbourhood of commons abounding with them, great pains and expense are often used to fence the enclosed adjoining lands from their depredations. Rabbits are certainly a species of stock unworthy of being cultivated, or bred in any considerable numbers, on enclosed and cultivated land; yet doubtless deserving considerable attention on impracticable sandy or rocky precipices, which may at the same time be planted; and when properly fenced in, and thus stocked, such land seems in a system of the highest improvement of which it is capable.

SECT. VI.—POULTRY.

THE profits of poultry are a matter of but little consideration, in or any where near the populous parts of Staffordshire; for though a sufficient quantity, both of poultry, ducks and geese are kept as breeding stock, yet the risk of having their progeny carried off by thieves is so great, and is so often actually the case, that little attention is paid to them as an article of profit. I have known some considerable farmers, who have had their stock of this kind pretty completely cleared off in this way, two or three times a year, and few escape an annual visit or two: so that it is often difficult to reserve a reasonable supply for the table; this business being always done in the night, the parties are seldom detected, and when they are, have been generally discharged with a whipping, and so enabled to proceed again in the same way. I have sometimes thought the value of farms in this country are lowered five per cent. by this circumstance, as all kinds of poultry are dear in the markets. The remedy, in my opinion, would be to have the poultry-house under the command of a lodging-room window, where fire-arms were kept in readiness, and a dog chained near. This construction of offices is adopted in the plans herewith sent, but has not, in practice, been hitherto sufficiently attended to.

SECT. VII.—PIGEONS.

Pigeons cannot here, in general, be considered as an article of profit to the occupier of a farm; though there are instances where something handsome is actually made of them by tenants; yet these instances are rare, and too seldom occur to be reckoned upon in a general account. Pigeons are more generally kept by lords of manors, and gentlemen of fortune; and but few farm-houses are furnished with the necessary accommodations for them; indeed the increase of pigeons beyond a certain degree, must doubtless be injurious to the cultivation of grain: within due bounds they do little harm; but increased beyond it, must prove pernicious vermin, both to the new sown crops and the early part of harvest. They are particularly voracious in early pease; and I have no wish to see them much increased, as conceiving the advantage arising from their increased numbers, for consumption as food, would be more than counterbalanced by the mischief occasioned by their depredations; and though we might have more animal food, we should have less grain, which last is unfortunately at present the scarcest article.

SECT. VIII.—BEES.

Some sanguine writers have conceived that very large products are to be obtained from the labours of these industrious insects; but of this I have great doubts; the climate of this island is not sufficiently steady even in summer; storms and showers often interrupt their labours, and at the end of the season it often happens that all their industry has not been sufficient for a winter's subsistence; many schemes have been proposed for taking part of their treasure without destroying them, but they so seldom have any to spare, that none of these are likely to answer. Ssome years ago I attempted this myself for several years together, upon Thorley's plan, but got no honey by this means, as the particular stocks I tried it upon, had never any to spare, and the experiment was injurious to the main stock of bees, Many people keep bees in this county for amusement, as well as for their productions; which are doubtless valuable. They succeed best in straw hives, neatly hooded over with an upper coating of straw; in the autumn those who have not raised a sufficiency of food for winter, it is doubtless humanity to destroy, as sudden suffocation is better than a prolonged but certain starvation; and sometimes a good hive or two are destroyed with the rest for the sake of profit; and though the average annual profit of bees may be but small, their cultivation is doubtless commendable, and ought to be encouraged.

CHAP. XIV.

RURAL ECONOMY.

SECT. I.—SERVANTS, LABOURERS, &c.

THE price of labour and the rate of wages vary in different places. They are always highest in the neighbourhood of flourishing manufactures, and lowest in remote parts of the county, where no such manufactures are established. The wages of a day-labourer vary in this county from 1*s*. to 1*s*. 6*d*. per day, and beer. In the summer quarter, 1*s*. per day, with meat and drink; and the draught or carriage of a load of coals, is very common here. Much of the labour is lett by the great, at prices which enable a good workman to get 2*s*. or more per day, and beer. Hedging and ditching are done by the perch, running measure; digging by the square perch or rod; thrashing by the bushel; 4*d*. per bushel for wheat, 2*d*. for barley, 1½*d*. for oats, are the prices generally given, besides an allowance of beer, and a payment by the day for dressing or winnowing. Grass is mown at about 2*s*. per acre, and beer; wheat is reaped for 5*s*. per acre, and dinner, or whole board and beer, or thereabouts; it varies a little in different places*. The hours of labour are, in winter, from light to dark; in summer, from six in the morning to six in the evening; in harvest from the time the dew is off in the morning to night, in reaping and carrying; and at other work, according to the emergency of business. The price of labour has increased within the last two years about one-tenth, or ten per cent.; and the summer or harvest labour rather more; which has been supposed to be caused by the canals cutting in the county, where a stout labourer can get 2*s*. 6*d*. and 3*s*. per day, without beer. Perhaps this advance is but just, and in proportion to the advance of the necessary articles of life.

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* Spring corn is mown at 1*s*. 6*d*. per acre, and beer.

The whole annual earnings of a labourer, in money and other considerations, may, I think, be thus stated.

	£.	s.	d.
Summer quarter; wages, meat and drink included, 13 weeks, at 15*s*.	£.9	15	0
Carriage of coals	0	10	0
Other three quarters; average between day-work and piece-work, at 10*s*. 6*d*. per week, beer included, 39 weeks	20	9	6
Privilege of first gleaning by the family, and douceurs to them	1	1	0
Total annual earnings*	£.31	15	6

Servants.—The complaint of the scarcity of good servants, and the difficulty of getting such, is pretty general; and although wages have been a good deal advanced, the services rendered for those wages are generally of less value: the wages at present given to farming servants, are nearly as follows:

Waggoner 8 to 10 guineas per annum.
Stockman 6 to 8 guineas ditto.
Boys 2 to 5 guineas ditto, according to age and circumstances.

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* Since the drawing up of this account to 1804, the price of labour has advanced nearly as four to five.

Women-servants:

Dairy-maid	£.3 10 0	to	£.5 . 0 0	per annum.
Under-maid	2 10 0	to	3 10 0	ditto.

The Rev. Dr. Falconer observes, that labourers' wages have lately advanced so much in his neighbourhood, that it is not easy to ascertain the average price; female servants in particular, can hardly be hired at any price; this he attributes to the numbers of women employed in the cotton mills lately erected; he says farther, "some regulation respecting the wages of servants employed in husbandry would be of universal use."[*] It seems, however, reasonable, that every labouring person should be entitled to the most they can make of their labour, and that the true cause of complaint is not so much the advanced wages given, as the dilatoriness and neglect wherewith the business is done; our men-servants often fly off into large towns, where they earn higher wages, and learn to spend them all when earned; thus acquiring bad habits and a depravity of morals, without at all bettering their circumstances. The labourers in this county are generally more to be depended on, than servants: when a man gets married and has a family, he is tied to regular industry, or distress will ensue. I have often thought one reason why our farming servants are less careful and steady, is the little chance they have of rising in life, or of bettering their circumstances, even by the most persevering industry; and that if a few small farms were reserved upon landed estates, and the preference of them given to those who should distinguish themselves by superior diligence and industry, it might act as a stimulus to farming servants, and encourage them to exertion in their business, and a persevering good behaviour. It is certain, that farming servants

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in this county might in general, if careful, save two-thirds of their wages, or more, if they keep from the ale-house; particularly, after having first provided themselves with a sufficient stock of clothes.

The following remarks on the proportion between the price of labour and provisions, are from Dr. Withering, and do great credit to his humanity: he says, "the wages of the day-labourers are certainly very inadequate to the price of provisions, and hence arises, in a great measure, the enormous increase of the poors'-rates: I confine my observations on this subject to country parishes; a man, his wife, and five children, living chiefly upon bread, as these people do, will consume one bushel of wheat per week; the man gains from 6*s*. to 9*s*. per week, and his bread costs 8*s*. or more, when such is the price of wheat. I know the necessity, of working people whose nourishment chiefly depends upon bread, having the best kind of bread, such as affords the most nutrition. Nothing is got by the higher wages he may sometimes earn at piece-work; the man soon wears himself out by extra exertions, and his family lose his support the sooner; a day-labourer at fifty begins to be an old man: no other proof is wanting of his being over-worked. On well considering this subject, perhaps you may think with me, that a labourer should earn weekly to the amount of a bushel and a half of wheat, and that the magistrates should at every Quarter Sessions fix the lowest price of day-labour for the three succeeding months, in the proportion I have stated, to the then price of wheat. Whenever the gentlemen employed by the Board of Agriculture turn their attention to this point, it will, through that channel, soon find its way to the Legislature."

The Doctor's sentiments on this subject must be applauded by every one, who is possessed of the feelings of benevolence towards his fellow-creatures; yet I have to remark, that the present high price of wheat being, it is hoped, only temporary, and occasioned by unproductive seasons, combined with other local causes; an advance of wages in the above proportion, would emancipate the labourer from feeling those effects at all, which every one ought to bear his share of; secondly, such advance of wages by the mandate of a court, would have a tendency to throw many labourers out of employ, as their employers would not care (and perhaps cannot afford) to submit to it, but would make shift with fewer hands. The grand remedy for the scarcity of provisions is a general enclosure, and bringing the millions of dormant acres of unproductive, though naturally fertile land, into cultivation, which, united with that perfection to which our present practice of husbandry is making a gradual progress, would produce plenty for a population much exceeding what is at present contained in this island.

SECT. II.—PRICE OF PROVISIONS AND OTHER LANDED PRODUCE.

THE price of provisions in this county has been in many instances very fluctuating, and their rise and fall seem owing to a combination of different causes; to the plenty or scarcity, import or export: to the plenty or scarcity also of money. Since I have been in the farming business, which is about fifteen years, I have known wheat at all prices, from 4*s.* to 10*s.* 6*d.* barley from 2*s*. to 7*s*. and oats from 1*s*. 6*d*. to 4*s*. 6*d*. and this for actual consumption; but it must be observed, that our bushel is nine gallons and a half. Butchers' meat has varied considerably in that period. Pork, or bacon hogs, sinking the offal, have sold from 2½*d*. to 4½*d*. per pound; cows calves, and sheep, from 3*d*. to 5½*d*. The price is at present high, but has by no means been gradually and regularly rising, but very often fluctuating. The price of butchers' meat has been generally more steady than that of corn. The following are nearly the present prices*:

Wheat, 8*s*. 6*d*. the bushel.

Barley, last malting season, from 5*s*. 6*d*. to 6*s*. 6*d*. but expected to be much cheaper the ensuing.

Oats, at present 3*s*. 6*d*. to 4*s*. The bushel, for all grain here, except malt, contains nine gallons and a half.

Beef and mutton, 3½*d*. to 4½*d*. per pound, from Midsummer to Christmas; and 4*d*. to 5*d*. from Christmas to Midsummer.

Lamb, 4*d*. to 8*d*.

Veal, 3*d*. to 5*d*. per pound.

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* This account was drawn up in the summer of 1794, and from that time to the present revision of it, no considerable alteration has taken place in the price of any thing except wheat. In the spring of 1795, wheat began to advance; in May, 1795, it was sold at 10*s*. 6*d*. the bushel of 72lb. weight: in August, it was actually sold at 20*s*. and even a guinea per bushel; in September, immediately after harvest, it came down to 10*s*. 6*d*. but has since unfortunately advanced, and is now at 13*s*. 4*d*. per bushel, November 11, 1795: and the flour called here best batch, or best household flour, is at 3*s*. 3*d*. the stone of 14lb. These prices refer to Wolverhampton market, which is the most considerable corn-market in the county.—*W. Pitt.*

Dry bacon, 6*d.* to 7*d.* whole sides, and 1*d.* more by retail.

Pork, in winter 4*d.* to 5*d.*; none sold in summer.

Cheese, 40*s.* to 45*s.* per hundred, of 120lb. and 4½*d.* to 5*d.* per pound by retail.

Butter, 10*d.* to 1*s.* per pound, of 18 ounces.

		s.	d.		s.	d.
Oak timber, per foot		1	0	to	2	6
Ash	ditto	0	9	to	1	6
Elm	ditto	0	9	to	1	6

The other sorts, as beech, sycamore, poplar, and the different sorts of fir, according to quality and demand, plenty, scarcity, and other local circumstances of time and place, varying from 8*d.* or 9*d.* to 1*s.* 6*d.* or 2*s.* per foot.

Farther instances of fluctuation in the price of landed produce.

From the harvest of 1803 to that of 1804, the price of grain, nine gallons and a half the bushel, was as follows:

	s.	d.		s.	d.
Wheat	7	6	to	8	0
Barley, average				4	0
Oats, ditto				3	0

Since the harvest 1804, to November, grain has been on the advance, and is now,

	s.	d.		s.	d.
Wheat, nine gallons and a half	10	0	to	10	6
Barley ditto	6	4	to	6	8
Oats	4	4	to	4	8
Beans	6	8	to	7	0

Butchers' Meat.—Beef 6*d.* mutton 6*d.* veal 7*d.* pork 5½*d.* per pound, and generally 1*d.* per pound advanced after Christmas; cheese 7*d.* to 9*d.* per pound; salt butter 1*s.*, fresh ditto 1*s.* 4*d.* per pound.

Timber, from the above prices advanced about 3*d.* per foot.

In the spring of 1805, grain had a farther advance.

	s.		*s.*	
Wheat, 9½ gallons, ...	13	to	14	per bushel.
Barley ditto	7	to	8	ditto;

but in May 1805, the price somewhat on the decline.

The present high price of wheat, is doubtless a serious and alarming evil; yet after all the cry that has been made against monopoly, and other imaginary causes, the true cause is certainly a real scarcity, occasioned by two unproductive seasons in succession, in this kingdom, combined with the extra consumption and destruction occasioned by an extensive war on the Continent, so very near our own ports, which would doubtless divert into its channel a proportion of our produce: the neglected cultivation of Flanders, Poland, France, and part of Germany, and the consequent diversion of our usual imports, have contributed towards increasing the calamity. The crop of 1794 was in this kingdom affected by a stormy spring, and sudden transitions from excessive moisture to extreme drought; and I should put down the whole crop of all sorts of grain in 1794 at one-sixth below average: the wheat crop of 1795, was injured by the extreme severity of the winter, by which a proportion of the plants perished; and the produce of wheat at harvest not superior to that of 1794: but the same cause not operating on spring-sown grain, or rather operating in its favour by the melioration of the soil naturally occasioned by frost, the latter is superabundant, particularly barley: the high price of wheat too, united with a suitable seed-time, has occasioned the sowing of an uncommon quantity of wheat this season, I believe not less than one-fourth above the average quantity generally sown; the consequence of which will be a diminution of quantity for the present year; but, under Providence, such an increase of quantity for the next, as may effectually remove the evil, at least for the present.

The most permanent cure for the evil in question, will doubtless be, by an improved and extended cultivation; by an improved system of management in the lands already appropriated; and the gradual addition of our practicable waste land, amounting, in this county, to at least one-sixth of that now in cultivation; for although our cultivation has certainly been extended as well as improved, it has hardly kept pace with the increase of population, combined with the additional consumption occasioned by the liberal modes of living, now become so general, though scarcely known to former times. That some abuses and impositions may have been practised by corn-dealers, must be admitted; I believe there were instances in which the holders of corn bought in at a reasonable price, previous to the late high prices, took the advantage of a rising market, and thereby made enormous profits; yet without opulent millers, bakers, or corn-dealers, the consumption of a populous country cannot be regularly supplied; and the clashing of interests, and competition between different dealers, will generally render justice to the consumer.

The following is given as the annual average produce of the county, in the various sorts of grain and pulse: the data on which the calculation is principally founded, are the returns made by the high constables to the Quarter Sessions, in answer to queries proposed by the Board: these answers were only received from a part of the county, but were promiscuous from all quarters; and the parts omitted are therefore supplied by analogy, in the same proportion.

The enclosed land of this county is supposed by estimate 600,000 acres.

Sorts of Grain, &c. grown.	Number of Acres.	Average Produce per Acre, Winchester Measure.	Quantity grown, in Winchester bushels.	Deduct Seed.	Remains for Consumption.
		Bushels.	Bushels.	Bushels.	Bushels.
Wheat	54,000	24	1,296,000	130,000	1,166,000
Barley	36,000	30	1,080,000	130,000	950,000
Oats	45,000	30	1,350,000	216,000	1,134,000
Beans, pease, & vetches	15,000	25	375,000	60,000	315,000
Wheat fallow ..	33,000	..	..	..	..
Turnips	17,000	..	..	..	..
Grass	400,000	..	..	..	..
Total	600,000				

Dr. Withering is of opinion, that a man, his wife, and five children, living as labouring people do, chiefly on bread, will consume a bushel of wheat per week.

Mr. Oulton, in an ingenious pamphlet on the potteries, thinks a fair average is three stones of flour per week, of 14lb. each, for six persons, taking in all ranks and ages, and including those who have more aid from butchers' meat; which is 156 stones per annum for six persons, or the produce of about 42 Winchester bushels. This makes the average annual allowance to each individual, seven Winchester bushels of wheat; whence the quantity raised in the county (exclusive of seed for the next year) is sufficient only for 166,000 persons, or about two-thirds of its present population, in an average season; and that this is the case at present, seems very probable, and is corroborated by every apparent circumstance. The deficiency is made out by purchase from other counties, or by oat-bread, which is eaten in considerable quantities in the north of the county, and in the potteries, though scarcely known in the south.

I think it very probable that an improved cultivation may very shortly add one-fourth to our average products per acre, to effect which, nothing more is wanting than for the present best management to become general; this quantity and more being already raised by our best farmers, independent of any advantage from goodness of soil. This circumstance, united with the additional cultivation of 100,000 acres of waste land, would increase the product of grain nearly in the proportion of two to three, and the production from pasture land would by a similar improvement be increased in as high a proportion.

SECT. III.—FUEL.

THIS is one of the most plentiful and reasonable comforts of life of which Staffordshire has to boast; the mines of coal being very extensive, tolerably near the surface, and of excellent quality: the price at the works from four to five shillings per ton; and in respect to farming labourers, the carriage of a load of near three tons weight is annually given by the farmer, for whom they work in harvest; the county is also well wooded, but little of which is burnt for domestic uses; the iron-works in the neighbourhood taking off any quantity, though ever so great, for charcoal. In the north part of the county, called Moorlands, a good deal of peat is dug for fuel; which is doubtless cheap enough, but not equally comfortable with coal. Upon the whole, fuel is a plentiful and cheap article; and the price of coal, at the works, not subject to much fluctuation: a regular and gradual advance has indeed taken place within a few years, which has been caused by an advance in the price of labour, and the materials necessary for the machinery used in the trade; and perhaps not in a higher proportion than was necessary to give a fair profit to the mine-proprietors.

The price of coals at the Staffordshire collieries is now advanced to from 7*s.* to 8*s.* per ton, November 1804.

CHAP. XV.

POLITICAL ECONOMY,
AS CONNECTED WITH, OR AFFECTING AGRICULTURE.

SECT. I.—ROADS.

THE roads of this county have been very much improved within the last forty years, by the introduction of toll-gates upon most of the public thoroughfares; and which, though a cause of much clamour at their first introduction, have been the means of much improving such roads; and no one now thinks any thing of the expense of paying toll, when he considers the advantage he enjoys in point of ease, safety, and expedition, in travelling, or conveying goods, or other articles. Many of the private roads are still in an indifferent state; and though they might be much improved by attention in the respective surveyors, and obliging the liberties to perform their statute duty, there seems in general, a want of sufficient energy to effect this; and perhaps in roads much used, and where materials for their repair are at a distance, their complete repair might lie too heavy on their respective liberties, and their reparation by a tax collected at a toll-gate upon all travellers, may be the most equitable way. Next to the improvement by a canal, a country is most improved by good roads; and in comparison to the different accommodation between a good and a bad one, the expense of an equitable gate-toll is a very trifling object.

SECT. II.—CANALS.

Respecting the conveniences for conveyance of heavy articles, perhaps no county in England, or even country in the universe, of equal extent, is better accommodated with artificial canals. I have marked the length upon the map of the county herewith sent, of those now in hand, as well as those which have been wholly executed nearly within the last thirty years. These canals extend about 200 miles in length, and two or three good projects of the same kind also might still be marked out within the county. They much facilitate the conveyance of bulky and weighty articles, such as coal, limestone, and lime, iron in the ore, or metal*, and considerably reduce the expense of carriage. The trade in those articles has consequently been extended in a very considerable degree, and the population of the neighbourhood where those articles are produced has increased. The Writer of this is of opinion, that the very rapid extension, not only of Birmingham, for the last twenty years previous to the present war, but also of the potteries, was much promoted by canal conveyance. Similar instances are to be found elsewhere: at Tipton-green, now a populous town, on the banks of the Birmingham canal; at Mr. Wilkinson's extensive works at Bradley near Bilston, as well as at the works before named in a general way, and at many others. Thus, these canals have been a means of considerably increasing population, by enabling the proprietors of mines of iron, coal, and lime, to extend their works, and by that means employ more people both in raising, manufacturing, and transporting the different articles. These canals cost in execution 500,000*l.* and upon the average pay 10 per cent. per annum to the proprietors; they consequently add half a million to the national capital, and 50,000*l.* per annum to its income; and with their consequent extension and improvement of the mines, manufactures, and commerce of the country, not less than double the sums above stated, and are certainly a great national improvement, as well as accommodation to a trading country.

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* Also flags and stone for building.—*S.*

SECT. III.—FAIRS AND MARKETS.

The weekly markets of the county have been before mentioned, and a list of them given in the geographical account (page 2), and therefore need not be here repeated; some of them are very considerable, particularly that of Wolverhampton; where is exposed to sale weekly, on a Wednesday, large quantities of the following articles, viz. all sorts of grain; butter and cheese; butchers' meat; poultry; various sorts of goods and toys in the streets, besides what are sold in the shops; fish; horned cattle; hogs; and sometimes sheep and horses. This market is very numerously attended by buyers from the populous country parishes in its vicinity, such as Bilston, Sedgeley, Willenhall, Darlaston, &c. and by farmers, butchers, and others, from various parts of Staffordshire and Shropshire. Some of the other markets are also considerable, as Walsall, Stafford, Stone, Uttoxeter, and many others. Most of the market towns have fairs, once or more every year; chiefly for the various kinds of live stock, and some for toys and manufactured goods; and a few of the most considerable villages have also fairs for live stock; but a correct list of these has not been ascertained.

Farther respecting marketing: in times of scarcity, and dearness of corn, the practice of selling by sample has been often complained of, and to it, has been attributed one cause of the high prices, and a clamour on this subject has been lately raised; and it has been said the Legislature should, and will, compel all corn to be brought into the market in bulk: but it is difficult to conceive what good effects can arise, or how an article can be lowered, by throwing obstacles, expenses, and difficulties, in the way of selling it; for instance, the corn sold in bulk in Wolverhampton market, is first, tolled by the clerk of the market; secondly, when sold, in order to its being manufactured into flour, it is to be dispersed to mills all over the country; sometimes to the distance of ten miles or more from the market; and if the farmer deals with a neighbouring miller, to the place from whence it came: thirdly, if it remains unsold, the farmer must either carry it home again, or hire a room for storing it, as there is no public room or corn exchange. I am persuaded the extra trouble and expense would be little less than 6*d*. per bushel more than in the present system of selling by sample; the natural consequence of such a regulation must therefore be, to render the article dearer, instead of cheaper. If any good would arise from having the quantity intended for sale at market, made public previous to such sale, a regulation might be adopted, obliging every person having corn for sale, to enter it in the market-book, before a certain hour, and none to be sold till after the ringing of the market-bell: the quantity on sale might thus be made public, without the trouble of exhibiting it; and the due observance of any such regulation might be enforced by proper forfeitures and penalties. It may be further remarked, that the populous country in this neighbourhood is in part supplied by farmers and others, from the distant parts of Shropshire, Worcestershire, and elsewhere, who attend Wolverhampton market with samples, but would never be induced to send their corn in bulk, previous to the sale of it: this part of the supply would therefore be prohibited.

SECT. IV.—MANUFACTURES AND COMMERCE.

1. MANUFACTURES. The manufactures of Staffordshire are very considerable, and comprehend a variety of articles, particularly hardware, nails, glass*, toys, japanned goods, and potters' ware; also productions in cotton, silk, leather, woollen, linen†, and many other articles.

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* The manufacture of glass is very considerable in that part of Staffordshire leaning towards Stourbridge, where a number of very lofty and spacious glass-houses have been erected; and the trade is carried on to a great extent. The country is full of genteel villas, belonging to the master-manufacturers, many of whom have acquired considerable fortunes in this trade.

† To which may be added, the making brass from copper, with *lapis calaminaris*; the dipping of iron plates to make what is called tin, &c. &c.—*S.*

A good many of the manufacturing families at Staffordshire are resident in the country, but in no proportion of numbers to those residing in towns; a country residence is doubtless favourable, both to their health and their morals, and conducive to their comforts and better circumstances; the confined life of a tradesman, in a close or smoky shop, requires at times fresh air, amusement, and relaxation: this, in the country, might be found in the cultivation of a roomy garden, upon the system proposed in page 35; which would much conduce towards supporting a family. In a town, this amusement is generally sought for in a walk to some ale-house; and every vegetable for food must be purchased with money. I have often observed in the landed interest, a great aversion to having manufacturers settle amongst them, under an idea of the certain consequence being an enormous increase of the poor's-rates. Upon this subject I wish to observe, that no parish will be injured by the settlement therein of the honest and industrious; it is the idle and the profligate alone, that are the cause of the evil complained of; a well-regulated police, and a proper limitation of the number of ale-houses permitted, with due attention to the regular management of such houses, would do much towards preventing the evil: at all events, I am thoroughly persuaded that a master manufacturer, with a proper capital, cannot more essentially serve the people he employs, than by fixing them in the country, with convenient habitations, proper work-shops, and spacious gardens.

The manufacture of hardware is carried on in the south part of the county to a great extent; and Wolverhampton, and its neighbouring populous villages, produce locks of every kind, and of the very best quality; and this may be termed the staple manufacture of this town. Buckles* are also manufactured here, and a great number of hands employed upon that article. In some particulars of steel toys, especially watch-chains, they have long been famous for exceeding every other place, and still stand unrivalled: but this manufacture in particular, and the others in general, have suffered much by the war, orders having been wanting, and remittances precarious. The manufacture of edge-tools, files, augers, and japanned goods here, is considerably extensive, as well as that of a great many other articles.

The staple manufacture of Walsall may be said to be shoe-buckles, and chapes, in which a great number of hands are employed, and some good fortunes have been made. Also this town and neighbourhood, particularly Bloxwich, are famous for the manufacture of sadlers' ironmongery, such as bridle-bits, stirrups, spurs, &c. These are sold to the saddlers' ironmongers at Walsall, and form the basis of a considerable traffic, carried on to great advantage, and by them circulated to every part of the kingdom, as I have been informed by Mr. Curtis, of Walsall.

The manufacture of nails in Staffordshire is very extensive, employing many thousands of hands in some of the most populous country parishes, particularly Sedgeley, Rowley, Westbroomwich, Smethwich, Wombourne, Pelsall, the Foreign of Walsall, and many other places. A great number of women and children, as well as men, are employed in making the finer and lighter sorts, which they do equally well. The manufactures of Mr. Bolton at Handsworth, are in this county, and very considerable, employing many hundreds of hands, chiefly, I believe, in various kinds of toys, and in the machinery for steam engines. Bilston furnishes a variety of plated, lackered, japanned, and even enamelled goods. Wednesbury, I believe, does something in the gun trade. Tobacco and snuff boxes of iron or steel, and finished in various ways, are got up at Darlaston, Willenhall, and in their neighbourhood. Most of these manufactures have suffered more or less by the war; though I understand the trades of nails and saddlers' ironmongery are pretty good; buckles and locks indifferent; and the steel-toy trade almost annihilated. These manufactures suffered a similar, or perhaps greater depression in the American war; but were extremely and uniformly flourishing during the peace, from the conclusion of the American war to the commencement of the present. This is a sufficient proof that their flourishing state is consistent only with a state of peace.

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* The buckle and steel toy trades have, in consequence of the renewal and continuance of the war, almost entirely declined.

The manufacture of potters' ware in the north of the county is very extensive and important, the value of the manufactured article being, as it were, a creation of the manufacturer, from a raw material of low value.

The Potteries consist of a number of scattered villages, occupying an extent of about ten miles; and may contain about twenty thousand inhabitants, including those who depend upon them for employment and subsistence.

They have not been so flourishing since the war.—*Mr. Wedgwood.*

Stafford, the county town, has a very considerable manufacture of shoes, boots, and cutlery, both for home consumption and exportation; and the tanning, and

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and other different branches of the leather trade, and also the manufacture of hats, are carried on upon a large scale, in many other towns in the county.

The cotton manufactures of this county are not inconsiderable: those of Mr. Arkwright, at Rocester, and elsewhere near the Dove, are upon a large scale, and employ a great number of hands; and those of Messrs. Peel and Wilkes, at Fazeley and Tamworth, are very considerable; besides which, there are extensive cotton works* at Burton and Tutbury. These manufactures have a great tendency to promote our national industry, by finding employment suitable to both sexes in youth, and thus initiating them in early habits of industry. The country is much obliged to those gentlemen by whose exertions and perseverance these manufactures have been introduced and established.

Leek has a considerable manufacture in the silk and mohair way; the manufactured goods from which are, sewing silks, twist, buttons, ribbons, silk-ferrets, shawls, and silk-handkerchiefs. In these manufactures, as by information from Messrs. Sleigh and Alsop, and Phillips and Ford, manufacturers, and others, are employed about two thousand inhabitants of the town, and one thousand of the adjacent country. In this trade some good fortunes have been made, and it has been very flourishing; but the check on paper credit, which in a great measure hurt the confidence of all connexions, diminished the trade here; and the war must in some degree have damped the demand for it abroad: yet the trade is now in a flourishing state, and considerably better than it was some months ago.

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* And manufactures of woollen cloth.—*S.*

Cheadle and Teyn have a considerable manufacture of tape, which finds employment for the industry of its inhabitants.

The woollen manufactory within this county is not very considerable, and a large proportion of the raw wool grown therein is sold into the clothing and stocking countries; yet there are wool-combers in most of the towns, and some which push a considerable business; and a good deal of woollen cloth is got up in the county by private families, though in less quantity than formerly.

There is no considerable public manufacture of linen, but a good deal of hurden, hempen, and flaxen cloth, got up in private families: a great many people resident in the country being now, and having long been, in the habit of growing a patch of hemp and flax, which is generally manufactured within the county.

Of the population of Staffordshire, I suppose one-third are supported by agricultural or other professions, or employments thereon depending, and two-thirds by manufactures, commerce, and mines.

With respect to the effects of extensive manufactures on agriculture, I believe there can exist but one rational opinion, and which must be, that those effects are of the most advantageous kind, and that in every instance the value of landed property will most rapidly rise, as the demand for, and facility of disposing of its products, is increased; and with this opinion agrees every remark I have received upon the 28th query proposed by the Board, and which refers to this particular subject. The only inconveniences that can possibly be complained of are, first, an advance in the price of labour, which is always highest in manufacturing countries; and secondly, an increase in poor's-rates, which must always be highest in populous countries. These inconveniences are abundantly compensated for, by an increasing consumption of landed produce; and a brisk demand for such produce at market; and it may be farther observed, that a populous neighbourhood affords an easy means of improving the adjoining land, to almost any degree of fertility.

SECT. V.—POOR AND POPULATION.

THE expenses of maintaining the parochial poor, was, I believe, pretty accurately ascertained about ten years ago, in consequence of Mr. Gilbert's attempts at reforming our code of poor's-laws; the whole annual amount throughout this county was then 45,101*l.* 10*s.* 10*d.*; see page 37 of this Survey. Nor do I think the expense had materially increased from that time to the beginning of the present war: since then, however, the increase has been enormous; in the parish where I live (Tettenhall) the poor's-rates have advanced 50 per cent. or as two to three; this advance seems, first, to have been caused by widows and families being left upon the parish, in consequence of the husbands and fathers going into the militia, or the army; and, secondly, by the severity of the last winter, and high price of corn succeeding. I calculate the annual rental of the county, including land and buildings, taken at actual or full value, at 600,000*l.** and the poor's-rate, previous to the war, at 1*s.* 6*d.* in the pound upon such full value; it is now probably 2*s*. 3*d*. in the pound. Respecting the state of the industrious labouring poor, who maintain themselves, it is certainly rendered less comfortable at present, by the high price of bread; which it is hoped will be only temporary. All kinds of the labouring poor, I believe, find full employment without any difficulty; trade is generally stated to be good; and farming labourers who choose to stick to one master, need not lose any time; and others have employment upon canals now digging, where they may earn still higher wages. These circumstances are some alleviation of the distress of the times, which it must be admitted, still press hard upon the industrious: one of their consolations must be, hope, and the expectations of better, cheaper, and more plentiful times in future.

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* But probably in 1804, 750,000*l.* per annum, and the poor's-rate near 3*s.* in the pound upon the full value.

Respecting aids to the poor, this county is by no means backward; the property of the poor under the management of ministers and churchwardens, and left them by the charitable donations of the well-disposed, is in this county very considerable; and, as far as I know, properly and judiciously applied to the relief of those who keep themselves from being chargeable to the parish. Voluntary subscriptions have often been set on foot, and very liberally supported, in times of scarcity and inclemency of weather; and people of all ranks have come forward in proportion to their means and ability.

The population* of this county is very considerable, and

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* The following particulars relative to the population of two parishes, the one merely a farming, the other a manufacturing parish, are communicated by the Rev. S. Shaw.

1. Bradley,

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and been of late years much increasing, a large proportion of its inhabitants being otherwise employed than in agriculture, viz in mines and manufactures. Some of the country parishes are almost incredibly populous. Sedgeley, for instance, contains upwards of sixteen hundred houses (I have been told two thousand), and probably ten thousand inhabitants. Rowley, West Bromwich, and Bilston, have, probably, five thousand inhabitants each. Wednesbury, Darlaston, Willenhall, Hansworth, and Tipton, are very populous. The town of Wolverhampton, previous to the present war, by the inquiries of an intelligent person employed in a poor's-rate assessment, contained eighteen thousand five hundred people; whereas, by a survey in 1750, its inhabitants were only seven thousand four hundred and fifty-four. Walsall now, or at least previous to the war, contained, in what is called borough and foreign, which includes part of the neighbourhood, about thir-

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1. Bradley, near Stafford, a farming parish of, I believe, near 4000 acres; now containing 102 houses, and 620 persons.

In twenty years, ending 1560, there were 49 marriages, 188 baptisms, and 152 burials.

In twenty years, ending 1790, there were 91 marriages, 401 baptisms, and 214 burials. The population, by analogy, must be doubled in 230 years: the health of the people wonderful, little more than one-third of the population having died in twenty years.

2. Darlaston, near Wolverhampton, a manufacturing parish, of 800 acres, 600 houses, and 3000 inhabitants, in 1793. In twenty years, ending in 1558, baptisms 149; burials 99. In twenty years, ending in 1793, baptisms 2566, burials 1500.

The increase here in 235 years in population, has been at least as great as one to sixteen, and one-half in number of the present population have died in the last twenty years.

The people are chiefly gun-locksmiths, nailers, huckle-makers, stirrup-makers, and miners, besides the small proportion employed in agriculture.

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teen thousand inhabitants. This is proved by a penny dole which has long been given annually to all ranks of people there. The number measured by the same standard in the thirtieth year of Henry the Eighth, was one thousand eight hundred and nine; and in 1686, according to Plott, not exceeding five thousand five hundred; and in such proportion has the population there been progressively increasing. The Potteries in the neighbourhood of Newcastle-under-Line employ and support a population of about twenty thousand people, exclusive of those in other employments: the population there has been most rapidly increasing for many years preceding the present war. The parish in which I live (Tettenhall), on a calculation from the number of births and burials annually, has increased in population during the present century as two to five. It is composed of people employed both in trade and agriculture; and its present number of inhabitants are about two thousand. Upon a retrospect of the whole, and considering all the data I can collect, I am of opinion that the population of this county, previous to the present war, was about two hundred and fifty thousand, and that its population has at least been doubled during the present century.

By the returns on the Population Act, as copied into the Monthly Magazine, the population of this county is stated at 239,153; it has been observed, that in some places omissions were made, from the suspicions of those concerned, that these inquiries were preparatory to a poll-tax, or to a general marking down for military service; and there is reason to believe that the population has not increased during the war, owing to the ruin of some manufactures, and the great drain of youth into the army.

CHAP. XVI.

OBSTACLES TO IMPROVEMENT, &c.

AMONGST the obstacles to improvement, tithes have been already mentioned.

Another great obstacle to improvement is perhaps, pretty often, the want of sufficient capital in the occupier, not so much for the purpose of stocking his farm, as for that of pushing forward and getting through those undertakings which may be necessary to make his farm productive; the capital wanted upon a farm of any extent being very considerable, especially if such farm be in a backward or unimproved state. For though five pounds per acre may be a pretty good allowance for capital upon land already improved, it is by no means sufficient under different circumstances, and where a number of improvements are wanting. Fencing, ditching, draining, marling, liming, town manure, with the purchase and necessary support of stock, until the effects of such exertions can come round, form obstacles insurmountable to a small capital; and the risk is too great for such to run, for fear of failing in the attempt. In all such cases, I think the landlord should come forward by himself, or his agent, to advance money upon real permanent improvements only; such as draining, purchase of lime or dung, manuring on the turf or land in a fit state for permanent pasture; and should charge to the tenant, interest (suppose at five per cent.) for money so advanced. This, I think, would be a prudent reservation in leases—for the landlord to have power to lay out money in this way, and lay the interest on the rent; having not the least doubt but all money judiciously so laid out, would answer the purpose of every party concerned: of the landlord, by improving his land, giving him interest for his money, and the best security; of the tenant, by a certain and permanent improvement of his farm, which would well enable him to pay the additional rent; of the public, by removing an obstacle to, and by furthering the means of national improvement.

My neighbour, Mr. Fowler, of Erdington, mentions the following obstacles, which he thinks should be removed. "The present law, in limiting the number of horses on turnpike-roads, is not one of the least. If all carriages were limited to weight only, that must and would have the desired effect of keeping the roads in good order. Suppose six horses were allowed instead of four, two of them would most likely be breeding mares, or young horses likely to improve; the six would not require to be so large as if four only were kept, but of a lighter, nimbler sort, and would be kept at a less expense than four, that are required to do what the six should do. There would be more probability that the seed would be sown in due season, that the harvest would be finished quicker, and that more time would be obtained for carrying on other improvements of the farm with the horses. I also think if the tolls at turnpikes were collected by the weight drawn, it would be much fairer than the present mode of collection by the number of horses. There is another obstacle to the improvement of land, the employment of attorneys-at-law by some gentlemen of large landed property as their agents, who, although eminent in their profession, know little or nothing about the proper management of land, and consequently are unfit to give advice to tenants, unfit to be woodmen, and totally unfit to have the direction and management of landed property respecting its cultivation."

Mr. Bradburne, who is a considerable practical farmer, and upon his own land, says, "if one or more Societies (for the improvement of agriculture) were instituted in each county, the members of such Societies would be more communicative, and a spirit of emulation might be excited."

Mr. Curtis thinks the greatest obstacles to the improvement of land are, "poverty, and an aversion to innovation." Due encouragement from landlords in furnishing materials for necessary reparations, and in not overwhelming a tenant with too heavy a rent, may be considered and ranked amongst the principal incitements to improvement.

AGRICULTURAL LEGISLATION AND POLICE.

Some of the obstacles to agricultural improvement which seem to require the assistance of the Legislature, or of public and patriotic Societies, in their removal, seem to be the following:

1. A general enclosure act, to enable all persons having a right, claim, or property, on common or waste land, to ascertain the same, and to have all such property set out and appropriated, in order to enable the several proprietors of such land to proceed in a gradual enclosure, improvement, and cultivation of all such waste land.

2. A commutation of tithes.

3. Public bounties, to such as make the most rapid, successful, and effectual efforts, in the reclaiming and

cultivation of waste land; regard being had to quantity, and practical utility.

4. The same for the draining and reclaiming of bogs or fens, and improving such land into useful arable, meadow, or pasture.

5. The same for clearing land from rocks near the surface, and enabling the plough to go where it never went before. Large quantities of land are to be found of this description, now merely sheep-walk: the rendering it capable of being ploughed, would not only increase the quantity of corn-land, but also very much improve the pasturage of all such land.

6. The same for planting precipices, and land impracticable to the plough, with timber and underwood, and properly fencing it; and for clearing and bringing into arable cultivation, an equal quantity of flat woodland.

These seem to be some of the leading points of agricultural legislation, and public bounty. With regard to the domestic police of agriculture, the encouragement of leases, on a system of liberal and equitable covenants, seems to deserve attention; and above all, some plan for securing both landlord and tenant at or near the expiration of a term; the one from injury being done to his estate, and the other from being deprived of that just benefit and advantage which he is entitled to from his own improvements.

To this may be added, the conducting of all business by system and regularity; both the cultivation of the land, the management of the stock, and the concerns of the family; and the dealings with others with honour and punctuality: for the situation of the practical agriculturist, affords a scope for the practice of the domestic, moral, and social virtues, and that not " hid under a bushel, but on a candlestick," and in a conspicuous point of view; his humanity embraces not only his friends and fellow-creatures, but the brute creation; his daily employ is to raise food for the hungry, and clothing for the naked; and his industry is not only for the advantage of himself and his family, but for the benefit of his country.

CHAP. XVII.

MISCELLANEOUS OBSERVATIONS.

SECT. I.—AGRICULTURAL SOCIETIES.

THERE are no Societies in the county that I know of, for promoting agriculture. The principal inducements are good markets, self-interest, and perhaps, in some degree, a spirit of emulation between different occupiers; from which inducements some of the farms have been brought to a pretty correct state of good cultivation, and which will be still farther improved if all the above inducements shall continue. Mr. Bradburne observes, respecting Societies, "I have not heard of any. I should have been much pleased could I have answered in the affirmative." Respecting a turn for improvement, "I never at any period observed this neighbourhood shew more inclination to pursue the present improved system of husbandry:" and respecting real improvements, "A more regular system of summer-fallowing, and of not taking above two crops afterwards, would be more productive of both grain and stock."

Since writing the above, two very respectable Agricultural Societies have been formed within the county, the one at Newcastle, including the Pottery; and the other at Lichfield. These are patronized and supported by the principal landed gentlemen and farmers

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in their respective neighbourhoods. The principal landed gentlemen and farmers in the south west of the county, are also attached to a similar institution held at Shiffnall, in the county of Salop.

The meetings are held half yearly; with shows of the various kinds of live stock, and premiums for improved animals, as well as for the best crops, improvements of land, operations in husbandry, steadiness and industry in servants and labourers, and other objects of rural and agricultural economy. The following are particulars of the autumnal meeting of the Newcastle and Pottery Agricultural Society, October 19, 1804.

Premiums adjudged:

To the Marquis of Stafford, for the best crop of turnips, a silver medal, cup, or five guineas.

To Mr. Dent of Oulton, for the second best, a silver medal, or three guineas.

To George Tollet, Esq. of Swinnerton-hall, for the greatest improvement in irrigation, a silver cup, or five guineas.

To James Cauldwell, Esq. of Linley-wood, for laying down land to pasture with white clover and grass-seeds in the best manner, a silver cup, or five guineas.

To William Miller, of Newcastle, for the best fallow for wheat, a gold medal, or ten guineas.

To Mr. Thomas Marsh, of Norton farm, for the second best wheat fallow, a silver cup, or five guineas.

For having brought up twelve children without parochial assistance, to William Smith, of Knulton, five guineas.

To William Owen, of Lawton, for having brought up six children without parochial assistance, three guineas.

Besides other premiums of two guineas, and one guinea each, to servants in husbandry.

The district of the Society extends to fifteen miles round Newcastle-under-Line.

The Lichfield and Shiffnal Societies, extend to similar subjects, and also to the giving premiums for breeding and rearing the best individuals of the various species of live stock.

SECT. II.—WEIGHTS AND MEASURES.

The customary weights and measures of this county differ considerably from the regular standard, and from each other; the custom of Wolverhampton market being 18 ounces to the pound of butter; 120lb. to the hundred of cheese; nine gallons and a half to the bushel of barley, oats, beans, and pease; and 72lb. to the bushel of wheat: whilst that of other markets in the county varies, some being more, and some less. Malt is generally, through the county, sold by the Winchester bushel of eight gallons, and wheat-flour by the stone of 14lb. Much complaint has been made of this variation, and much has been said about a regulation of weights and measures, and obliging every person to sell by the statute, or standard weight or measure; but I cannot think it a matter of much importance, particularly in the wholesale way: for in every contract of any magnitude, the parties will always understand each other. And although malt may be sold out by a less measure than barley may have been bought in, yet the competition between different maltsters will render justice to the consumer. In cases of retail, let the magistrate do his duty, by protecting the poor from fraud: the wholesale dealer needs not his protection, he will take care for himself; and the public are best served by a competition between different dealers; who, the more numerous they are, the less danger will arise to the public, of monopoly or combination.

The above were my ideas upon this subject; but others think differently, as will appear by the following remarks from a gentleman who seems to have studied the subject.

Malt being sold by Winchester measure, proves every description of grain may; there is only wanting a resolution in the farmers not to sell otherwise, and it is settled. But I am fearful, that obstinacy and selfishness which pervade many of that class of people, will be a bar to such determination taking place. I think "it a matter of much importance" such regulation should take place, on the following ground. A farmer comes to market with his *tub* of a measure; the miller knowing his man, takes him into a corner, buys his corn, at sixpence or more over the market price. The farmer goes and informs his friend the price he hath sold at; in a short time it is known through the market; each farmer then contends that his corn is of equal value, and the price becomes general.

The malady does not stop here; it runs from market to market. The standard of bread being fixed from the market price of corn, that is unreasonably lowered, so that the whole community, particularly the most useful description, mechanics and labourers, suffer

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suffer for a smuggled bargain. The miller or corn-factor, retailing their corn, sell no more than 32 quarts, but charge the price they give for 36 or 40, as the market price, and lay on a little more for profits. This act proves, that it is "matter of importance" to equalize the measures, that the consumer may be enabled to know what measure is bought, and by inquiring the market price, be enabled *nearly* to know the extent of the imposition made on him. It will direct the average price of corn to be made with precision through the kingdom. As there is an effectual law to enforce regular measure to be used, sure some means will be devised, by the wisdom of the Board of Agriculture, to carry it into execution.

The repeated decisions of the worthy Lord Chief Justice, have done away all doubt as to the power of the law; but those determinations were made at too great a distance from the midland country, to have any effect on those people: there are wanting a few examples to be made on the spot, to stamp on them the knowledge of doing wrong; this I conceive might be done, by appointing a few persons in each county, as market surveyors, who should lodge informations against the offenders of the law, a few of which would be sufficient to reclaim them. The name of informer I admit is odious, but in this case, being regularly appointed, he would not be more so than an exciseman, being equally appointed to put the law into execution. Two years since I joined with some respectable farmers of this county and Leicestershire, in an association to sell by Winchester measure only, and by example induce our brother farmers to do it also; but from the great opposition we met with, from the millers, corn-factors, and innkeepers; all people *materially interested*, we failed carrying into execution a law, the good effect of which to the public is beyond estimation.

CONCLU-

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CONCLUSION.

MEANS OF IMPROVEMENT,

AND THE MEASURES CALCULATED FOR THAT PURPOSE.

THE great improvements of which this county is capable, seem to be chiefly the following: First, the cultivation of its waste and unimproved land; this has been repeatedly named before, but can hardly be too much insisted on. I hope the Board will take such measures as may bring about this desirable event in a general way, against the conclusion of a peace, as it would furnish ready employ for the men disbanded from the Navy and the Army, which must be very numerous upon the breaking up of the different fencible corps, and other temporary levies of men. Secondly, extending the practice of improving land by irrigation, or watering, to all places capable of that improvement, and wherever the water is not already appropriated; by which means, the growth of hay on such land might be greatly increased, and the mowing of arable land for hay rendered unnecessary, the breadth of corn-land would thus be naturally extended. Thirdly, the embankment of rivers, to prevent the destruction of hay; with sluices constructed through such banks, to let through the water for irrigation, at pleasure. A work of this kind I had the pleasure of seeing upon the Trent below Stone; but for this business to be done in the best manner, it must be taken up in a general way: and unless the consent of all parties could be obtained, the assistance of the Legislature would be wanted. I know large tracts of meadow-land in this county, upon which I have been informed the hay is upon an average, ruined once in three years, that might be rendered perfectly secure by embanking; and at the same time watered at pleasure. Fourthly, the draining of boggy, fenny, and springy land: much has been done, and much remains to be done in this way: this kind of land is generally totally unfit for the production of grain, and in pasture produces but little useful herbage; draining may therefore be ranked amongst our most capital improvements, as, when effectually done, it is the means of rendering land formerly unproductive, capable of producing good hay, or pasture herbage; and oftentimes capable of arable cultivation for any kind of grain. Fifthly, the cultivation of the better and finer grasses, and other perennial pasture herbage, clean and unmixed with weeds, at the time of laying land to grass; for though Nature be very bountiful, and soon fills the turf spontaneously, yet there is reason to believe this work would be much improved, as well as facilitated by art and industry; by a judicious selection of the seeds of the most valuable pasture plants. It is somewhat wonderful, that with all our boasted improvements in agriculture, we are so backward in this almost leading particular. Sixthly, the planting of precipices, and all land impracticable to the plough, with timber and underwood, and properly fencing in the same, and, if not incompatible with the growth of such plantation, the stocking such woodland with rabbits. Under this head I would include, the planting the summits of our barren mountains with Scotch firs, sycamores, and other hardy kinds, which would both ornament and shelter the adjacent country; also the planting of undrainable bogs (if such there be), with one or other of the willow tribe; and as such plantations attain certain stages of growth, the clearing of an equal breadth of flat woodland, and converting the same into arable and pasture land. A due attention to the above particulars, united with the extension of the best parts of our present practice, seem to constitute the highest perfection of agriculture to be expected at present, and indeed would add greatly to, and very much increase, the landed products of the county.

The miscellaneous observations made on a tour through the Moorlands; as well as the Botanical Catalogue of the most remarkable plants, natives of this county, seem not altogether to come within the plan chalked out by the Board; I have therefore added them by way of Appendix. The first of these articles, as well as many other parts of this Survey, is now improved by the notes of John Sneyd, Esq. of Belmont; and the Botanical Catalogue corrected and enlarged by communications from the same, as well as from Dr. Withering, and the Rev. Mr. Gisborne; to these gentlemen I am extremely obliged for their attention, as well as for the botanical information I have received from their remarks; being myself merely in the noviciate of that science, I have the pleasure of finding the original errors, fewer than might have been expected. Mr. Sneyd's notes are, to prevent a longer repetition, marked S. I hope the remarks on the Moorlands, may induce the land proprietors to attempt some of the improvements there suggested; and the Botanical Catalogue be a means of stimulating the curiosity of those who have any; and directing their attention to that beautiful and interesting part of Nature's works; in which case, they may be a means of promoting the main design, and great object of the Board, the improvement of Agriculture.

WM. PITT.

APPENDIX.

MISCELLANEOUS REMARKS AND OBSERVATIONS,

MADE IN A TOUR THROUGH THE COUNTY IN THE SPRING OF THE YEAR 1794, NOT INCLUDED IN THE AFOREMENTIONED ARTICLES.

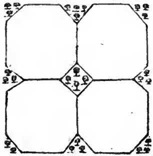
CALLED at Fishetwick, the noble seat of the Marquis of Donegall, on the west bank of the Tame.

Here the genius of a Brown, aided and seconded by the munificence of the noble owner, have conspired to render a dreary morass one of the most delightful spots in Nature, and have in a great measure succeeded: which success is still further heightening by the improvements of Mr. Elkington, in the interception of springs, and the discharging of stagnant water. The house and offices here are nobly magnificent, and the hospitality within correspondent. The shrubberies and plantations are not an exact copy of Nature, but that improvement and embellishment of Nature itself, which was reserved for human art, ingenuity, and industry. A small brook from Freeford, which here falls into the Tame, assumes, through art, the grandeur of a noble river; and even exceeds in appearance this river, except indeed when the Tame, after a profusion of rain, overflowing its banks, appears like an immense lake. The demesne at Fisherwick consists of nearly a square mile, or about 600 acres. The pasture part of it is stocked with deer to the amount of 300 couple, or more; also with horses, cows, and sheep. A considerable part is mown for hay, and the mown land kept in good heart by the overflowing of the Tame.

The cows here are very good, of the long-horned breed, thick and heavy in the carcass. The sheep are of different breeds; Leicester, Wiltshire, South Down, Cannock-heath, and crosses from these. The South Down wethers had been killed with much profit, as the steward informed me. A few South Down ewes still remain: they are a thick, square, small sheep, to which the natives of our own commons, where they are bred with attention, bear a great similitude. But no respectable farmer here, with an enclosed farm, devoid of common right, would think them good enough for his enclosed pasturage, unless as annual stock.

I am obliged to the Rev. Dr. Falconer, for his remarks on some of the parishes in this neighbourhood, which made my own examination of them less necessary. His remarks extend to Fisherwick, Whittington, Tamhorn, Elford, Wigginton, Heselor, Thorp, Constantine, Clifton Campville, Harenton, Harleston, Statfold, and Scierscott. In this tract of country, the banks of the Tame are good meadow land. The upland in Fisherwick, Whittington, Tamhorn, and Statfold, rather inclines to a light or gravelly soil. The other parishes or lordships are a strong or mixed loam: the courses of crops are the same as mentioned under that article. Some considerable dairies are kept, and cheese is the main object of such dairies. The sheep are pretty generally of the Leicestershire breed. The country is wholly enclosed, except two commons or wastes, which are Whittington-heath, consisting nearly of 600 acres, where Lichfield races are held. It is now a good sheep-walk, and would, if enclosed and cultivated, be some of the best turnip and barley land in the county*. The other common is at Clifton Campville, now a good sheep-walk: it contains about 450 acres. The enclosing of it is in comtemplation. This country is in many places subject to wall-springs, which are cured by under-draining. Very little timber grows in these parishes, except at Fisherwick and Tamhorn-park, which latter, though a woodland, is more productive of rabbits than timber. The roads in these districts are generally good. The cows at Tamhorn are subject to the foul water†.

Respecting timber and planting, the Doctor submits the following plan to the consideration of the Board: "That in every Act for an enclosure, a clause should oblige the proprietor of the new enclosed land to plant a certain number of oaks in proportion to his share of his enclosure, and should direct the plantations to be made in the angles of the fields, agreeable to the annexed sketch: by adopting which plan, a less quantity of posts and rails would be required, and the angles of each field would be converted to a profitable use, and corn would grow close up to the rails: whereas no corn will now grow in such angles. This is not the only advantage that would arise from this plan: the trees full grown, would afford good shade for cattle, and an easy communication through these plantations would be found from field to field. It would also be very ornamental to the country."



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* With the assistance of marl and lime.—*S.*

† Black water, a fatal disease if not speedily put a stop to; cattle rarely

The stock of cows in this district are generally long-horned, and of superior quality. Considerable tracts of excellent meadow land, subject however to floods, are found on the side of the Tame. On the Trent also, we find excellent meadows; the hay meadow at Burton, which is a kind of public property, would be worth many guineas per acre, if rented. Burton is a considerable town, both of trade and manufacture.

Tutbury is a pleasant little town, containing nearly 1000 inhabitants, with a lately established cotton-work upon a considerable scale: it does also some business in the wool-combing branch. Tutbury-castle, now in ruins, stands on a lofty eminence, stupendously overhanging the Dove, the meandering of whose waters, and the range of fertile meadows on whose banks, may from hence be traced to a great distance either way, up or down. This eminence, abruptly formed by Nature, has been rendered less easily accessible by the defensive military arts of former times. It is composed of an immense heap of marl. The ruins of the building are principally of hewn free-stone, with admixtures of gypsum; it has apparently been battered from a hill on the contrary side of the town. The property is in Lord Vernon of Sudbury, in this neighbourhood. Here is a draw-well of good water, but of consi-

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rarely survive more than five or six days. The following receipt is given by a gentleman, who says it has never failed in more than 100 instances.

Take a pint of verjuice, or good vinegar, and dissolve in it a pound of salt; give it the beast, letting her go out in a pasture where there is water. If her urine does not alter in 24 hours repeat it. This may be depended on. To a two-year old give half the quantity; and to a yearling one-fourth.—*R.*

considerable depth; low enough, I suppose, to be supplied from the Dove. On the declivity of the castle-bank, on the west side, I observed the following remarkable plants.

1. Dwarf elder *(sambucus ebulus)*, in great plenty.

2. Wild teasel *(dipsacus sylvestris)*, in considerable quantity,

3. Wild woad, or dyers' weed *(reseda luteola)*, a few specimens.

Having often observed the first and third of these plants in similar situations about the ruins of old castles, I am led to conjecture, that they have been formerly cultivated in these places for some use

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SOME PARTICULARS

OF THAT PART OF STAFFORDSHIRE CALLED MOORLANDS, NOT INCLUDED IN THE FOREGOING ACCOUNT.

THE north part of Staffordshire, called Moorlands, is situate to the north of a line conceived to be drawn from Uttoxeter to Newcastle-under-Line. The face of this part of the county is various, but in general hilly, with large tracts of the land waste, or uncultivated. The first market-town from Uttoxeter is Cheadle, situate in a pleasant vale of good mixed soil, but surrounded by rude and barrens hills: those hills are composed of huge heaps of sterile gravel, that on the west side overhanging the town*. The principal herbage on this hill consists of broom, heath, whortleberries, mountain cinquefoil; all beggarly, and of diminative growth: also of milk-wort, the mountain *carex's* matt-grass, *cistus's*, and knap-weeds. The hills north and west of the town, in the parishes or liberties of Cheadle, Tean, and Dillorn, are of the same material, upon an understratum of sand or sandy rock: the herbage the same as before, but pitiful and beggarly: amongst which heath *(erica vulgaris)* is geneally most predominant. These barren wastes are pretty extensive, and not worth, I think, 1*s.* per acre as pasturage for sheep, or any other animal; they are, I fear, generally too poor and beggarly to be reclaimable

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* It is submitted, that the observation of the hill overhanging the town, has been hastily made.—*John Holliday, Esq.*

It is not meant literally, in that sense being impossible; but figuratively, a view of the town from this hill giving a bold command, even of the chimney-tops.—*Wm. Pitt.*

Cheadle-park forms the hill, it is three miles in circumference, and consists of thirty-three bold enclosures, now lett at 15*s.* an acre on an average, and abounds in mines of coal of great value.—*J. H.*

The observations made, refer only to the hilly part near the town, which has not been improved.—*W. P.*

Some of these lands in and near Dillorn, have been greatly improved by John Holliday, Esq. lord of the manor of Cheadle; and the inexhaustible veins of excellent coal underneath, will greatly enhance their future value; in the valley too at Dillorn, in the grounds opposite that gentleman's house, is found a large quantity of strong raddle. In 1792, the gold medal was adjudged to Mr. Holliday, for having planted, at Dillorn on 28 acres, 3 roods, 28 perches of land, 113,500 mixed timber trees; besides which Nature has abundantly enriched his truly romantic and extensive winding vales, with plenty of oak and other foliage.—*Rev. S. Shaw.*

I cannot but regret the not having waited on Mr. Holliday, and bestowed more attention on the property of that gentleman, and should with great pleasure have reported his extensive, and public spirited improvements: yet it cannot be denied, but that the sterile, barren, and miserable appearance of some pretty extensive hilly wastes, in the neighbourhood of Cheadle, justify the observations here made.—*W. P* by cultivation for the purposes of corn or pasturage. I cannot, however, help entertaining a strong idea, that they might be converted into coppices and plantations of timber and underwood: the Scotch and other firs and sycamore would probably succeed. This last is now become a valuable wood, being worth from 18*d.* to 2*s.* per foot, at Birmingham, and has, I understand, succeeded well in some very exposed and barren situations. Perhaps many other of our native timber trees might succeed, intermixed with these, as one would shelter and screen another. To give any such plantations a fair chance of success, I should propose to begin, not on the summits, but on the declivity of the hills: and as such first plantations increased in growth, to proceed with fresh ones nearer the summit, till the whole should be covered: by which management the plants of strength and growth would be made to protect and shelter those of tender age. The putrefaction and rotting of leaves from such plantations would increase and enrich the surface soil; and as they came to maturity, the woodlands, upon plain and practicable ground, might be cleared and converted into arable and pasture land. If such scheme be practicable, which I think it certainly is by judicious management and perseverance, these dreary barren hills, which now convey an idea of nothing but poverty, want, and misery, would not only ornament and beautify the country, but, by furnishing it with timber and wood, would answer the purposes of more valuable land, and enable an equal breadth of plain woodland to be converted to pasture and arable, without rendering the supply of these necessary articles uncertain or precarious.

The commons, or wastes, between Cheadle and

Oak-moor*, called High-shutt, Ranger, and Alveton-common, consist of an immense number of rude heaps of gravel upon an understratum of soft sandy rock, thrown together without order or form, or rather into every form that can be conceived, into sudden swells and deep glens, with scarcely a level perch: the mind, endeavouring to account for their formation, must conceive it owing either to some violent convulsion of Nature, or some strange confusion of matter. This tract, impracticable to the plough, now rough, barren, and bare, might be improved into woodland and plantations, and some open spots of the most favourable aspects might be reserved for gardens to cottage tenements, and cultivated with the spade and hoe. Above Oak-moor, to the north-east, I had the pleasure of seeing the idea before stated, of planting precipices, executed. A plantation has been made there on a declivity as barren, rocky, and bare of soil as any before described. This plantation seems about twenty years old, is in a thriving state, and contains the following sorts, viz. Scotch fir, spruce, oak, lime, birch, sallow, and mountain ash. This is the highest improvement to which the sides of barren precipices can possibly be brought by human industry; and I think that all our public and patriotic societies, who offer premiums for planting, should confine such premiums to grounds impracticable to the plough, or of small value, not exceeding, *per* acre, a small specified sum. I consider extensive plantations upon rich, level, arable, or pasture land, as a public nuisance and national evil, at least so long as there are large tracts of the above description remaining unoccupied.

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* Called so, from being nearly covered with dwarf oaks.—*S.*

A little north of Oak-moor the limestone country begins, and extends over a great breadth of country to the north, east, and west, in many places rising out of the main surface in huge cliffs. The Weaver-hills are of considerable extent. They are composed of immense heaps of limestone, which I was much pleased to find covered with a rich calcareous loamy earth, capable of being improved into very good arable or pasture land. They are enclosed in large tracts by stone walls, but not subdivided, and large breadths have never undergone the least improvement; which I much lament, as the neighbouring lands which have been improved are covered with an excellent fine turf, and bear good crops of grain. These hills are a very elevated situation, overlooking, or at least as high as any of the Moorland or Derbyshire Peak-hills, which may be seen from their summits. I believe them to be from one to two hundred yards perpendicularly higher than any of our hills in the south of the county: the fall, even from the foot of these hills to the highest parts of the Dove or the Churnet, is very great, and those rivers are very rapid. On one of the summits of these hills, in a very red soil, I found growing, indigenous, my old friend, which I had long since cultivated, the upland burnet *(poterium sanguisorba)**. This plant I have never before seen or heard of, as a native of Staffordshire: but it is very common in the calcareous soils of Rutland and Bedford, being a very different plant to the meadow burnet *(sanguisorba officinalis)*.

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* It grows in profusion amongst the limestones, in all the rough broken places, and others to the north of this county, as well as in Derbyshire; and it might be useful to transplant the young roots, or sow the seeds, as winter food for sheep (especially Dorsetshire ewes, which are very fond of it), the plant being remarkably hardy.—*S.*

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The herbage of these hills contains many good plants, both grasses and trifoliums, but the hills are much over-run with uneven lumps, which seem to be worn out or decayed ant-hills, covered with moss or lichen; and though they are a tolerable sheep-walk, I must consider them as little better than waste, and capable of a high degree of improvement by cultivation. Stanton-moor, to the east of these hills, is a considerable waste on a limestone. The sheep-stock of this country has been mentioned before.

Large quantities of lime are burnt upon Cauldon Low, and elsewhere in this neighbourhood, and there are marks of lime-kilns formerly on Weaver-hills. Lime is much used here as a manure, being sometimes laid on ploughed ground, and at other times on turf, with very good effect in fining such turf. It has been remarked, that after liming a coarse turf, white clover has been produced in abundance, where that plant had not been observed before. The limestone here is intermixed with a proportion of gypsum or alabaster.

In a large tract of this county the fences are almost wholly stone walls*. This practice I cannot but consider as barbarous. Quickset fences are much cheaper, better, more durable, vastly more beautiful and ornamental, and make the country and climate more temperate; for in winter the quickset affords much better shelter

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* These stone fences having been originally raised from the prevailing motives of convenience, and cheapness, in finding the material on the surface, no wonder they should be continued; and in many places (particularly low situations) they are superior to hedges.—*S.*

I am sorry to differ in opinion from so respectable an authority, but I cannot still but think quickset fences infinitely superior, in every respect, to these loose stone walls, built without cement or mortar, and which a mischievous animal might demolish instantly. My reasons appear opposite these remarks.—*W. P.*

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shelter against storms of wind, rain, snow, or hail, to man or beast; and in summer, by its refreshing shade, renders not only more bearable, but pleasant, that solar heat which, under a stone wall, reflected into a focus as it were from a burning glass, is almost insupportable. The fanning breeze, the gentle zephyr, and those other pretty fancies of the poets, are unknown, and because never felt, would never have been conceived here. I hope the owners and occupiers of land will have so much regard for their own interest, and the symmetry and beauty of their country, as by degrees to do away this invention of barbarous ages, and a violence to Nature, by planting quicksets, to which the stone walls would be a fence and shelter on one side. With the quickset should be planted in corners and proper places, clumps of trees, and in the fences a few oaks, elm, witch-elm, sycamore, and other forest trees, but not ash, which should be in the clumps: these both afford shelter to cattle, and ornament to the country, as well as turn to the great advantage of the proprietor. When the quickset fences shall have been reared, the limestone walls burnt may turn to good account as manure, and the gritstone will be ready to repair the roads. This improvement, and some others before named, which I cannot but strongly recommend, once completed, posterity will wonder why the country was called Moorlands.

The Moorlands, in point of elevation, are far above any thing we have in the southern part of the county, rising perhaps at least from 100 or 200 yards perpendicular above the general level of that country, hill above hill, and plain above plain, on which heights large tracts of enclosed pasturage are situated. This elevation greatly increases the degree of cold, by combining

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bining the different causes that produce it, and by being more exposed to the elements of air and water in every form and variety of wind, hail, snow, or rain. The air here, considerably more rarefied, is less capable of retaining the solar rays; the country is almost in a state of nature; it has no clothing nor shelter except the stone walls, which have no effect whatever against the cold. Such a system of enclosure is completely barbarous. Plants, as well as animals, in this climate require shelter and clothing, or must be starved and limited in their growth. I am firmly persuaded, that the calcareous part of the Moorlands, after quickset enclosures, and a sufficient number of plantations on the precipices and summits shall have acquired some maturity, may be improved into one of the finest tracts of land in the county. The calcareous part of the Moorlands, or that on a limestone bottom, is pretty extensive, reaching in length from the Weaver-hills to Longnor, and in breadth from the Dove to Morredge, including fifteen or sixteen parishes, and fifty or sixty square miles. The quantity of limestone here is inexhaustible, being in many places in strata of immense thickness. This is the best part of the Moorlands, and the soil seems to have a natural aptitude for producing a fine herbage of grass; and, to the credit of the people here, I must observe, that their breed of cows, of the long-horned kind, are generally superior to those in the south of the county, where the land has been longer in an improved state. I attribute this to the plough, and to the growth of corn, the chief consideration in the latter division, while stock here has been the principal object. But this general rule, like most others, must be admitted with some exceptions.

Not far from Okeover, I observed a practice well worthy, perhaps, of imitation in other places, of washing young quickset hedges with lime-water, to prevent their being browsed on by cattle.

Cabbages for cattle are planted in the fields near Okeover, and the ground is well prepared. The extent of meadow-land on the Dove is here much narrower than lower down. In a meadow where the water has been suffered to stagnate too much, a large quantity of the *polygonum amphibium* grows. The plantations at Okeover are flourishing, with a due proportion of oak. The house and offices are neat, pleasantly situated in a paddock of excellent fine turf, commanding a view of the Dove and its banks, with a neat Gothic church at the very door. The paddock is well stocked with deer. At Ilam is a pleasant seat, the property of Mr. Port, but occupied by Mr. Clive. The romantic situation of this place suggests the idea of a glen in the Alps. Here two considerable rivers, the Hamps and Manyfold, burst from under the limestone hills, after a subterraneous passage of several miles, in separate streams, which has beeu proved by throwing corks into the streams above. The precipices which surround the valley in which Ilam stands, are well clothed with oak and other wood; and the pleasure-walks from the seat on one of these precipices are wonderfully romantic and various. These pleasure-walks resemble shelves, one almost perpendicularly above another; by the side of which, Nature, with scarcely any assistance from Art, has furnished a profusion of flowers of no contemptible appearance; amongst others, native geraniums of different sorts, particularly the *Robertianum*, also the *centaurea scabiosa*, and many other showy natives, whose names, for want of minutes on the spot, I have forgot. In a meadow over the water, the ramson *(allium ursinum)*, a very showy flower, but no very desirable pasture plant, flourishes in profusion. The subterraneous rivers here are very considerable, at least equalling the Dove. In a limestone grotto, and elsewhere, there are several specimens of petrified fish*, some of them apparently in the spot rivetted by Nature, others brought from elsewhere; some of them appear of the carp or barbel kind. In a grotto here, Congreve is said to have composed some of his plays; and indeed the situation is very advantageous for composing: the shady bower above, the murmuring stream below, the recluse and retired situation, without the reach or hearing of noisy intruders, all conspire to fix the mind upon its individual object, and enable it to send forth an effusion of its collected powers. The subterraneous rivers, after bursting up here, form two very fine cascades. From these pleasure-grounds we view a very bold and romantic prospect of two hills, called Thorp Cloud and Bunster, on either side the Dove; the latter, in Staffordshire, is an immense heap of limestone, but covered with a light earth, and well stocked with rabbits. Between these two hills the Dove falls in abrupt cascades, but is not in any degree superior to the subterraneous waters before named. Here are large quantities of limestone fallen from the overhanging precipices. The highest summit of

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* These are broken irregular fragments of chert *(silex potre)* embodied in the limestone rock, when in a fluid state, which when swelling out towards the middle, bear some resemblance to fish, and as the limestone is softer than the chert, most of these fragments project. Three or four good specimens of these are shown to those who visit Ilam, at the confluxes at the Hamps and Manyfold, where by being much trod on, they project, and are become more and more observable.—*S.*

Bunster I estimate at 300 yards perpendicular above the Dove, and the fall of the Dove from hence to Trent, 100 yards more. The sides of these immense precipices of Bunster have a scattering of wood, which I doubt not might be easily increased in any desired proportion. The sorts are principally maple, elder, hazel, and hawthorn. The remarkable plants on this mountain are sedums, geraniums, veronicas, hypericums, and a savoury sweet-smelling mint; also a very rank *galeopis* in some places; also in some of the summits, in great plenty, the mountain stitchwort, and a very diminutive *galium* amongst nettles, and a rank moss. The ridge of this mountain terminates, in some places, in a number of conical sugar-loaf hills of bare limestone. This hill, though of great elevation, is not nearly equal to the Weaver, nor so high as some of the Peak hills over the Dove.

To corroborate the justice of the idea of planting on precipices, I had the pleasure to find the stumps of some very large ashes, which have been sawn down on the declivity of Bunster, facing Ilam, sitting on one of which, of more than a yard diameter, I make this memorandum, May 29, 1794; and I cannot but persevere, upon every occasion, in strongly impressing and enforcing this idea, as the dreary aspect of a great tract of this country is wholly owing to the neglect of the land proprietors and occupiers, in not raising quickset fences and plantations on the declivities; and it is one of the greatest absurdities and neglects in agriculture, that this bleak, elevated, and exposed division, should have remained so long, and should still continue in a naked state.

One circumstance, however, in the farmer's management here, deserves commendation. The land is naturally much more adapted to grass than corn, the better sorts of grasses, and many of the trifoliums being produced spontaneously. To encourage their growth, little more is wanted than to extirpate their enemies, the more luxuriant weeds, or the bushes of furze and heath. Accident, or the discernment of the occupiers, has adapted their management to this circumstance, and the much greater proportion of the land is pasture, stocked with cows and long-woolled sheep: the pasturage would be much improved in many places by pulverization, and by sowing clovers, trefoils, and hay-seeds. This is not in all places practicable, on account of the rocky surface, although large tracts enclosed with stone walls, but never yet cultivated, might be thus improved. The limestone under-stratum is generally covered with a calcareous loam of different qualities and depths. Where it is dry, friable, and sufficiently deep, it is rich; and with its spontaneous herbage only, it is admitted to be good feeding land, but only, as they say, for three months in the year. This is accounted for, from its naked state and exposed aspect. It would undoubtedly give good crops of any grain. The thinner soils nearer the rock not having a furrow of soil, are good sheep-walks, and are not subject to burn in any season. The moister and more tenacious loam is the worst of all, but might be improved by draining; but the stone fences do not even admit of ditches.

Mill Dale, near Alstonfield, is a long narrow vale or glen, of great depth. The sides consist of overhanging precipices of limestone, estimated to be from 100 to 150 yards of perpendicular elevation, and so very steep, that they can be clambered up but in very few places. The width of this glen, vale, or dale, at the top, scarce exceeds the depth of its sides: it seems formed by the bursting or breaking of the hill which composes its sides, occasioned by a want of solidity in its bearing. The vale of Manyfold is situated between Wellon and Butterton, where the waters of the river Manyfold are absorbed by the fissures under the limestone hills, and discharged again at Ilam, four miles below. The warmest imagination can scarcely conceive a spot more extravagantly romantic than some parts of this vale. Thyrsis's Cavern* here, is a considerable excavation, pretty high up the side of a lofty precipice: it has somewhat the appearance of the inside of a Gothic church, and appears to me to be a work of art. Starlings alone are its present inhabitants. Near this place, by the road side, the upland-burnet, *poterium sanguisorba*, grows spontaneously. At Ecton is a very considerable mine of copper and lead, the property of his Grace the Duke of Devonshire; and there are other mines of the same metals in this district†. The calcareous or limestone bottom ends at Morredge; and the under-stratum in the tract of country west of Leek, and of this waste, is generally sandy or gravelly clay, or gritstone rock. This part of the country, north-east of Mole-Cop, is the worst part of the Moorlands, and of Staffordshire, the surface of a considerable proportion of this land being too uneven for cultivation. Large tracts of waste land here, though so elevated in point of situation, are mere high moors and peat-mosses; and of this sort are a part of Morredge, Axedge, the Cloud-heath, High-forest, Leekfrith, and Mole-Cop, though ranking amongst the highest land in the county. The summits of some of the hills in this county terminate in huge tremendous cliffs, particularly those called Leek Rocks or Roches, and Ipstones' sharp Cliffs, which are composed of huge piles of rude and rugged rocks in very elevated situations, piled rock on rock in a most tremendous manner, astonishing and almost terrifying the passing traveller with their majestic frown. Here single blocks, the size of church steeples, are heaped together; some overhanging the precipice, and threatening destruction to all approachers; and some of prodigious bulk have evidently rolled from the summit, and broke in pieces. These stupendous piles, the work of Nature, are a sublime lecture on humility to the human mind; strongly marking the frivolity of all its even greatest exertions, compared with the slightest touches of that Almighty hand which placed them here; in whose presence all flesh is as grass, and the proudest productions of the highest efforts of human genius, are but as chaff. The speculative mind, in endeavouring to account for their origin or formation by any known laws, agency, or operation of Nature, is lost in amazement, and led to exclaim, with the Egyptian magicians, "this is the finger of God!" for the most superficial observer may perceive that it is his work. Leek Rocks or Roches, are composed of a coarse sandy grit rock; those of Ipstones* have for their basis gravel, or sand and small pebbles cemented together.

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* Thor's-house Cavern (the god of thunder) there, are very lofty rocks, above, and the thunder is frequently tremendous here.—*S.*

† Particularly at Mixton, three miles south-west, belonging to Mr. Sneyd, of Belmont, which has been worked twenty-one years, and produces plenty of good copper, though there is unfortunately a mixture of lead in one of the best veins.

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* Those of Ipstones are *(breccia arenacea)*, or coarse plum-pudding stone.—*S.*

Upon Morredge and Axedge commons, large quantities of peat are dug for fuel, and a number of labourers were digging it when I examined this country the beginning of June, 1795. The peat-mosses on Morredge were generally three or four feet deep; the soil afterwards was a gravelly clay. The peat, both here and on Axedge, is porous as a sponge, and equally retentive of moisture; so much so, that it was now, and I believe always is, boggy, notwithstanding its high situation, and a dry season, and yields so much water from pressure, that it furnishes small lakes in the hollows, rivulets down the declivities, and starves the natural herbage around; so that scarcely any thing flourishes, or indeed grows, on or near these spots, except heath *(erica)*, and that starved, whortleberries, the cottony rush or grass* *(eriophorum)*, *carex's* and rushes. I can have no doubt but these high bogs may be easily drained†: the fall is instantaneous, the cutting of drains easy, and stone in any quantity on or near the spot. Indeed another great obstruction to the improvement of these lands is, the immense quantities of stone lying on, or of rocks rising out of, and above the surface. This would be somewhat lessened by such draining, as, from the huge tremendous cliffs, in which the hills above-named, and many others in this neighbourhood terminate, immense fragments of broken stones have fallen in every direction. It is evident that these rocks, in some early period, have fallen in pieces‡, either by some violent convulsion of

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* Eriophorum; the *eriophorum vaginatum*, generally grows in wet places among stones, but the polystachion in common bogs.—*S.*

† There is a clay bottom to the peat-mosses that retains the wet.—*S.*

‡ " Have been torn in pieces;" probably at the time of the general burst,

Nature, or more probably by an alteration in the earth's centre of gravity, from some agency under the immediate will of the Almighty Creator. These stone cliffs and fragments cover a considerable extent of land, particularly about Ipstones, Wetley-rocks, Leek-roches, to the west of Flash, High-forest, the Cloud-heath, and Mole-Cop common, with the waste north of this last, and indeed in many other places. Here the warmest or most sanguine friend to agriculture can expect little more than sheep-walk or plantation; and I cannot but most strongly and repeatedly call upon the land proprietors to attempt the latter, in which I have no doubt, but a persevering attention will be crowned with success; and by which such land will be brought to the highest state of possible improvement.

It is, however, an encouragement to attempt other agricultural improvements in uncouth spots, when every attentive observer can remark, that some such spots here, which have been levelled, cultivated, and improved, are now covered with a very good and fine herbage fit for pasture, and seem very gratefully to have answered or exceeded every expectation that could reasonably have been formed by those who attempted and executed such improvement. There is in all the Moorland soil, whether upon a calcareous or grit bottom, a staple, or a something, which has a tendency to produce pasture; so much so, that the pasture here, however thin the soil, or near the rock, never or scarcely ever burn or parch from drought. This, upon the limestone bottom, I should have expected; but upon the

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burst, occasioned by volcanic minerals and water; when the strata lay regularly lapped round the globe; and consequently must have made a sufficient resistance to have occasioned the formidable convulsion.—*S.*

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the grit bottom, should scarcely have believed, had I not in part seen, so far as the advance of the season, by no means a moist one, permits me; and had I not farther been informed from good authority, that symptoms of drought are here scarcely ever observable. Perhaps the climate or temperature of the atmosphere on this high ground, naturally cool, may in some degree favour this tendency to summer verdure.

Oat-bread is eaten very generally in the Moorlands, and none other kept in country houses. This, however, I cannot consider as any criterion of poverty, or of a backward or unimproved state, as I think it equally wholesome, palatable, and nutritive with wheat bread, and little cheaper even here; for upon inquiry at Leek, I found the oatmeal and wheat-flour nearly the same price. For several days during my stay in this country, I ate no other bread from choice, preferring it to wheat bread, and rather wonder it is not more general, and kept in London and elsewhere for such palates as prefer it. In the remote country villages it is often baked thick, with sour leaven, and a proportion of oat husks: this, even when ground mouldy, is eaten by the natives without murmuring.

South of Mole-Cop the country alters, and can no longer be termed Moorlands. Here a regularly enclosed country commences, with all the beauties of quickset enclosure, shelter, and shade. The Potteries are of considerable extent and population, and very much a national object. The Trent and Mersey canal, which passes through them, has been a very great convenience in the conveyance of heavy articles used in this manufacture; which circumstance, united with the genius, spirit of enterprise, and exertion of the masters and workmen, has happily succeeded in raising this manufacture in a very rapid manner, from small beginnings, to its present importance and consequence. The great improvements introduced into this manufacture by Mr. Wedgwood and others, will be for ever an honour to their memory, and rank them among the benefactors of mankind. The cream-coloured ware has all the neatness and elegance of porcelain; is in very general use, and is wrought into a vast variety of forms for purposes both useful and ornamental. The raw material used in this business being of little or no value, the amount of value of the manufactured article, which is very considerable, and a great addition to the national capital, may be considered as wholly created by the industry of those concerned and employed in this manufacture: by the success of which, Burslem and Hanley-green, from small villages, have rapidly swelled into large market towns, and are now equal in population to Newcastle and Leek; besides which, the Pottery includes a number of populous villages scattered over this neighbourhood. Mr. Wedgwood is no inconsiderable planter. His seat and pleasure-grounds at Etruria, are laid out with neatness and elegance, and very much ornament the country.

The land here is in general cold, inclining to a stiff soil, which continues to near Leek, within a mile or two of which its quality improves. From Leek, three or four miles towards Ashbourne, the land is very barren and rocky; yet about the church at Ipstones, and from thence to Belmont, it is much improved, and in many places good pasture land. Ipstones' sharp Cliffs have been mentioned before; to the south of which is Belmont, the seat of John Sneyd, Esq.* pleasantly situated on the west declivity of a romantic glen, the slopes of which are well covered with oak and other wood, with a brook murmuring through the bottom into the Churnet. Mr. Sneyd's plantations are extensive, and of all the different stages of growth from infancy to maturity; I had the pleasure of observing some recent ones upon apparently barren rocky land, impracticable to the plough, where the young plants are healthy and promising. Had every gentleman who has landed property in the Moorlands, improved their estates in this way, in an equal degree with Mr. Sneyd[*], I should have had little occasion to have complained of the "nakedness of the land" in so large a portion of this country.

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* On a gently rising hill fronting the south-east, nearly surrounded by

Rare Plants in Mr. Sneyd's Woods and Walks.

1. Cow-grass, or cow-wheat *(melampyrum sylvaticum[†])*, recommended by Withering as an excellent cow herbage. I found the same plant since in the woods at Upper Areley, and hedge sides, Walsall-wood, and Brownhills.

2. Yellow pimpernel *(lysimachia nemorum)*.

3. Bearsfoot *(helleborus fœtidus)*.

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by deep woods of oak, ash, elm, lime, maple, &c. with underwood of mountain ash, hazel, birch, alder, salix's of several species, &c. &c.; which underwood is cut, on an average, once in six years, to make crates for the Pottery. The brook, after feeding eight or nine large fish-pools, runs into the river Churnet.—*S.*

[*] Thomas Gilbert, Esq. of Colton, and John Holliday, Esq. of Dillorn, whose respective and extensive plantations nearly adjoin to, and reflect their beauties on each other, being all of them comprised within the circumference of a few miles.—*Rev. S. Shaw.*

I wish these gentlemen were more generally imitated; very large tracts in the Moorlands still want a similar improvement.—*W. Pitt.*

[†] *Melampyrum pratense.—Dr. Withering.*

4. Crimson grass vetch *(lathyrus nissolia)*.
5. Spleenwort *(asplenium scolopendrium)*.
6. Angelica.
7. St. John's worts *(hypericum)*, four or five species.
8. Goat's beard *(tragopogon)*.
9. Adder's tongue *(ophioglossum)*.
10. Avens *(geum)*, two species.
11. Bistort *(polygonum bistorta)*.
12. Chamomile.
13. Geraniums, five or six sorts.
14. Gentian *(gentiana)*, two sorts.
15. Golden rod *(solidago virgaurea)*.
16. Blackberried heath *(empetrum nigrum)*.
17. Red wortleberries *(vaccinium vitis Idæa)*.
18. Heaths *(erica's)*, three sorts.
19. Helleborine *(serapias)*.
20. Twyblade *(ophrys)*.
21. Moonwort *(lunaria)*.
22. Goldilocks *(trichomanes pyxidiferum)*.
23. Enchanters nightshade *(Circæa lutitiana)*.
24. Meadow rue *(thalictrum)*, two sorts.
25. Yorkshiro sanicle *(pinguicula vulgaris)*.
26. Strawberries *(fragaria, vesca, sterilis,* and *oppositifolium)*.
27. Golden saxifrage *(chyrsosplenium alternatifolium)*.

Besides many other curious plants, in common with other places.

Mr. Sneyd informed me, that the wintergreen *(pyrola)* is common in the neighbourhood; two species growing on shaded mossy banks.

Passed Trentham, the seat of the Most Noble the Marquis of Stafford. Here the hanging wood with its umbrageous foliage, the verdant lawn with its beautiful shady spreading trees and clumps, promiscuously, as it were, disposed in infinite variety; the spreading sheets of water, with their accompaniments of impervious shade, and lost to the eye by their length, and winding behind the swelling hill and shady copse; have an effect truly magnificent, and worthy of the noble owner; the house and offices are correspondent. This place, for the beauties of shade, water, and turf, united, has few equals, and no superior.

Near Newcastle are made large quantities of excellent blue tile, for covering buildings; which, on account of their superior quality in duration, are sent to a considerable distance.

From Talk-on-the-Hill I proceeded through Audley and Balterley to Betley. The country is enclosed with quicksets, well planted, and the timber trees are of luxuriant and flourishing growth. The soil in general is a mixed gravelly loam; the under-stratum is various: sand, gravel, marl, or gritstone rock. The soil, here, being the happy medium between the sterility of sand and the harshness of clay, is adapted to either tillage or pasture. The meadow and grazing land is covered with a good herbage, and the corn crops have a promising appearance; and upon the whole, this district may be called a fine country.

Betley was formerly ranked amongst the market-towns of the county, but has now lost that honour, its market having declined. It is a neat little town, ornamented by two handsome seats; the one belonging to Mr. Tollet, and the other to Mr. Fletcher. There is a road through it from Newcastle to Nantwich and Chester.

Between Betley and Newcastle is a good deal of light land,

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land, light enough for turnips, and some few small closes were under preparation for that vegetable; but I think in too small a proportion. South of the road leading from Betley to Newcastle, a stronger soil, or friable clayey or marly loam, commences, and continues with some variations to Eccleshall, and farther; the under-strata being generally marl or rock, with some exceptions, principally on rising ground, where the surface is often lighter, and the under-strata are sand, gravel, or sandy rock. On waste also, or uncultivated ground, as Maer-heath, Ashley-common, &c. the surface is a thin, black peat-moor, and the under-strata, especially of the hilly parts, sand, gravel, or sandy rock. The herbage is poor, being generally heath, gorse, whortleberries, *carex's*, and a small proportion in patches of the grasses. The soil mends, and approaches more to a friable marl nearer Eccleshall, where the upland is a rich, deep, red, friable, marly loam, excellent for wheat, or any other grain. The meadows round the Bishop's palace are also generally rich, though some patches have yet the appearance of being morassy, and seem to want draining*.

The Bishop's woods in the neighbourhood of Eccleshall are very extensive, and well-stocked with timber and underwood. Since drawing up the accounts of the woodlands and plantations of the county, I have received the following information respecting them from Mr. Harding, who I believe has the management of them.

"The extent of the woods near Eccleshall, including the Bishop's woods and Burntwood, are, I believe, about 1500 acres.

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* The present Bishop (Dr. Cornwallis) has done more than all his predecessors together, towards effecting this necessary work.—*S.*

" The system of managing them is variable. Some parts of the Bishop's woods are cut at fourteen years growth for crate rods and heads for the potters' use; others at seven years growth, for rods only. The timber trees are mostly oak, and left as near an equal distance as can be, from 40 to 80 on an acre. The soil being very poor in most parts of these woods, the oaks are slow in growth. This soil is in general of the gravel or grey sandy kind, and would not be worth more than 8*s*. per acre if in cultivation. The value to the owner is more in their present state, than if in cultivation; the employment to the labourer of greater consequence, being in the winter season; and the benefit to the public much greater; for without a supply of wood from these coppices, the potters would experience a want of wood for the purpose of making crates to pack their ware in.

" The best part of the wood, such as willow, alder, birch, or ash that is clear, is made use of for the purpose of hay-rakes, scythe poles, mop stails, and other articles for the brushmakers' use. In the low parts of the woods, where the soil is of a better nature, the underwood will pay 15*s*. per acre annually, if it is well stooled, and attention paid to planting the spaces between the stools. THOMAS HARDING.

" *Ashley-heath, July* 5, 1794."

Between Eccleshall and Stafford, about a mile south of the road, is Latford-pool. This pool, quite neglected, and without being of the least use, keeps back the water so as to render upwards of 100 acres of land a perfect morass, incapable of producing any useful herbage; a large proportion of which morassy land is the property of the Chillington family. The draining is, I understand, in agitation, and should by no means be neglected, as the land might be converted to useful meadow, and in its present state is a national loss. The water and damaged land are, I understand, different properties. This accounts for the neglected state of the land, which the owner has no means of draining without drawing down the pool. The strong marly upland, with some variations, continues from hence southward, as far as Blimhill and part of Breewood parish. The nature of the soil in the midland part of the county is explained in the Map.

The southern parts of the county having some peculiarities, they are attempted to be delineated in the following short remarks made on the particular spots, in a tour though that division of the county.

Rowley Regis.—This parish exhibits a very striking singularity, being in itself distinct from any other district in the neighbourhood, or in the county. It is principally composed of an insulated mountain, ending or finishing in various peaks, pikes, or summits. The highest summit, called Turner's-hill, is the highest ground in the south of Staffordshire, but much beneath the Moorland-hills, or the Wrekin and Clay hills of Shropshire. The other highest points of Rowley-mountain are Oakham and Corney hills. This mountain has for its basis, a singular species of quartzose-stone, devoid of any grit quality, called Rowley rag-stone; large quantities of which are carried to Birmingham and elsewhere, for pavements and repairing roads. It is extremely hard, too much so to be hewn by a common tool; the colour is a rusty blue,

blue. This stone is totally void of any calcareous quality, but very probably containing a small proportion of iron. It lies in an infinite number of fragments, and some of them of immense bulk, both above, upon, and beneath the surface. The rock called Rowley hail-stone is of this quality, and of great size. Dr. Plott has most absurdly expressed a doubt, whether this may not have been a production of art. It is evidently the work of Nature. The Rowley stone, when dug for, lies in no strata, but in rude heaps in every direction, generally beneath the surface soil, but often rising above it, with innumerable fragments both upon the lands and roads. The hills north of Rowley, near Dudley and Sedgeley, are composed of limestone; whilst those of Clent, to the south, may be termed a stone brash*, or innumerable small fragments of broken rock stone, intermixed with a red sand or sandy loam: whilst Rowley, as it were insulated, differs from both; the surface-soil a strong marly loam, retentive of moisture even in its elevated situation, and producing a good herbage of grass. The roads of this parish are rocky precipices, and most of the heavy carriage done on the back of horses.

The *Hills of Clent* are, at and near their summits, composed of a light soil, intermixed with small broken fragments of rock. The lower ground is of a better staple, as containing more of a marly or loamy quality. The stone brash quality goes apparently to a great depth, rendering the soil porous, and passing the rains through quick, which renders this soil liable to burn in hot summers, except where the moisture is retained by the marly loam abounding in the surface soil. A considerable part of these hills is nothing but sheep-walk, totally unimproved, but covered with a fine turfed herbage, intermixed with little rubbish, except here and there a furze or gorse bush. These hill-summits are very high ground, nearly equalling those of Rowley; they seem for the greatest part capable of the turnip and barley culture. This part of the county has several extensive commons. On one near the Stewponey, I examined the herbage, and found it principally heath, fern, sheep's fescue, matt-grass, white galium, and sheep sorrel.

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* Or breccia, from which it is corrupted.—*S.*

Kinver is a light gravelly soil, on a grit-rock bottom, of various quality, from fertility to sterility. On Kinver-edge is an old extensive military work or encampment, now occupied by sheep. Kinver-common is still in an unimproved state; though enclosed and appropriated, but not subdivided. Of a considerable tract enclosed in this neighbourhood some years back, part is improved and part not; but some progress is making: the soil being sterile, the improvement to render it fertile must be a work of time. West of Kinver, and south of Enville, the soil changes into a strong clayey or marly loam, more or less harsh or friable, under which description is included the whole of Over-Arcley, and part of Enville and Bobbington. The hills are often rocky, with small fragments upon and near the surface; in some part quartzose, in others gritty. The surface soil varies in colour from red to grey, with all the shades of colour between. The cultivation the same as in other strong soils*. This parish has formerly been famous for fruit, especially apples; but the orchards have been suffered to decline, though some recent attempts have been making towards reinstating them, and the soil and aspect are doubtless well adapted for the purpose.

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* Over-Arcley.

At Sir Edward Littleton's, at Teddesley-park, I observed a practice forgot to be named in its proper order, and in my opinion almost peculiar to the place. Although several hundred acres of land are kept in hand, yet almost the whole being kept in turf, little or no grain of any kind is grown; to supply therefore the deficiency of straw for litter, large quantities of fern are collected, of which one or more large stacks are formed every year; considerable breadths of the common being mown for that purpose.

BOTANICAL CATALOGUE,

Of the most remarkable Plants, Trees, or Shrubs, natives of this county; including generally, such as have been observed by the Writer of this Survey; with the addition of a few from Gentlemen named in this Work.

The dietetic or agricultural plants having been mostly noticed before, are here generally omitted, as well as those of local growth, or peculiar to particular places, which may be found by referring to the Index.

1. Star-grass (*callitriche verna*, and *autumnalis*); in ditches, very common.

2. Privet (*ligustrum vulgaris*); common in hedges

on this farm, makes an excellent garden-fence when cropped.

Brook lime (*veronica beccabunga*); an wholesome but pungent spring-salad, common in streams.

4. Common speedwell (*veronica officinalis*); heaths, and uncultivated ground (recommended by Hoffman as a substitute for tea, but is more astringent, and less grateful).—*Withering*.

5. Valerian (*valeriana officinalis*); common in moist ground; a variety of this plant is of considerable repute in medicine.

6. Water flag (*iris pseud-acorus*); in moist situations.

7. Cotton-grass (*eriophorum*); on bogs.

8. Matt-grass (*nardus stricta*); the staple grass of some of our waste lands: on Cannock-heath.

9. Reed (*arundo phragmitas*); in rivers, ponds, and lakes, common.

10. Wild teasel (*dipsacus sylvestris*); near Tamworth common, and elsewhere on moist ground.

11. Field scabious (*scabiosa arvensis*); pastures and corn-fields.

12. Broad-leaved plantain (*plantago major*); road sides, common; the leaves are applied to bruises and cuts.

13. Cross wort (*galium cruciata*); hedge sides, common.

14. Yellow ladies bed-straw (*galium verum*); the flowers will coagulate milk, and cheese may be made from them.

15. Spurwort (*sherardia arvensis*); on this farm*, common.

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* New House Farm, Pendeford.

16. Dog-wood (*cornus sanguinea*); in hedges.

17. Parsley piert (*alchemilla aphanes*); on arable land, common.

18. Pearlwort (*sagina procumbens*); on this farm.

19. Pondweed (*potamogeton*); various sorts, in water, and on moist ground.

20. Scorpion-grass (*myosotis scorpioides*); hedges and fields, very common; in the dry parts of the county (*Mr. Gisborne*), and not unfrequently in water. —*W. P.*

21. Comfrey (*symphytum officinalis*); hedge sides. The young stems and leaves are excellent when boiled.

22. Borage (*borago officinalis*); road sides, and amongst rubbish: the young and tender leaves are good in salads, or as a pot-herb.—*Withering.*

23. Bugloss (*lycopsis arvensis*); road sides, and corn-fields, cows, horses, and sheep eat it.

24. Viper-grass (*echium vulgaris*); a showy flower, worthy a place in gardens, very common.

25. Buckbean (*menyanthes trifoliata*); in pits common, a beautiful flower, the leaves very bitter: two ounces, it is said would supply the place of a pound of hops.

26. Featherfoil (*hottonia palustris*); in watery places between Lichfield and Burton, by the road side; a beautiful flower.

27. Pimpernel (*anagallis arvensis*); in corn-fields, common.

28. Great bindweed (*convolvulus sepium*); moist hedges, common: the inspissated juice of this plant, in doses of 20 or 30 grains, is a powerful drastic purge.

29. Bell flowers of sorts (*campanulas*); hedge sides.

30. Woodbine or honeysuckle (*lonicera periclymenum*); in hedges.

31. Mulleins (*verbascums*); several sorts, hedge sides.

32. Henbane (*hyoscyamus niger*); amongst rubbish, at the Four-crosses on Watling-street-way; a poisonous plant of powerful medical qualities, but its uses seem not fully ascertained.

33. Dwale, or deadly night-shade (*atropa belladonna*); amongst the lime-works of Sedgeley and Dudley, very common; also at Moseley, in the parish of Bushbury, near the seat of Mrs. Horton: one of our most poisonous plants; the ripe fruit has a beautiful appearance, and is not unpalatable. Many instances are recorded of the deleterious effects arising from taking it internally: I have frequently eaten one or two of the ripe berries with impunity.—*W. P.*

34. Woody night-shade (*solanum dulcamara*); in pits and hedges, common.

35. Centory (*chironia centaureum*); extremely bitter; common in pastures on this farm.

36. Buckthorn (*rhamnus catharticus*); in hedges.

37. Smooth buckthorn (*rhamnus frangula*); in hedges on this farm.

38. Gooseberry (*ribes grossularia*); in hedges, and have seen it on a church tower.

39. Black currant (*ribes nigrum*); I have found this shrub in thickets, and remote situations.

40. Mountain currant (*ribes alpinum*); Mr. Sneyd of Belmont has found this shrub in the Moorlands of Staffordshire, of the dioica kind, that is unfertile, unless male and female plants grow near each other, of which he shewed me specimens, transplanted into his garden.

41. Periwinkle (*vinca major* and *minor*); in hedges, bitter, and slightly astringent.—*Withering.*

42. English mercury (*chenopodium bonus Henricus*); on road sides; a good dietetic plant, worthy of cultivation; little, if at all, inferior to spinach.

43. White, green, and maple-leaved, goosefoot (*chenopodiums album, viride,* and *hybridum*); common garden weeds.

44. Elm (*ulmus campestris*); a large timber tree, very common in this county.

45. Witch elm, or wych hazel (*ulmus montana*); a timber tree of quick growth, common here.

46. Sanicle (*sanicula europæa*); hedge sides near Betley, and elsewhere; slightly bitter, aromatic, and astringent.

47. Pignut (*bunium flexuosum*); pastures, orchards, &c. the roots would be an agreeable addition to our winter desserts.

48. Hemlock (*conium maculatum*); in hedges common: a plant of active poisonous qualities.

49. Angelica (*angelica sylvestris*); in moist woods and hedges; warm, acrid, bitter, and aromatic.

50. Water parsnip (*sium augustifolium*); common in streams; a plant of active properties that ought to be inquired into.

51. Fools' parsley, or lesser hemlock (*æthusa cynapium*); common in gardens, and much resembling parsley, for which it is sometimes mistaken; when eaten it occasions sickness; if the curled leaved parsley only, was cultivated in our gardens, no such mistake would happen.—*Withering.*

52. Sweet chervil (*scandix odorata*); Tixall, near Stafford.—*Withering.*

53. Rough

53. Rough chervil (*scandix anthriscus*); near Tamworth-castle.

54. Wild chervil (*chærophyllum temulum*); common in hedges.

55. Ground ash (*aegopodium podagraria*); in some hedges and orchards in great abundance; the leaves may be eaten early in the spring as a pot-herb.

56. Marsh elder (*viburnum opulus*); a handsome shrub, common in hedges; the Guelder rose is a variety of it.

57. Common elder (*sambucus nigra*); in woods and hedges; if turnips, cabbages, fruit-trees, or corn (which are subject to blights from insects), are whipped with the green leaves and branches of elder, the insects will not attack them. If sheep that have the rot, are placed in a situation where they can get at the bark and the young shoots, they will soon cure themselves. The flowers are fatal to turkies; the berries are poisonous to poultry.—*Withering's Botany*; where many other qualities of this shrub are described.

58. White berried elder (*sambucus fructo alba*); at Cowbridge, near Rocester; also near the farm-house occupied by Mr. Hordern, Essington, near Wolverhampton. A wine is made of the fruit, which by many is much esteemed.

*58. Chickweed (*alsine media*); on land rendered fine, by cultivation, common, and well known: the young shoots and leaves when boiled can hardly be distinguished from spring spinach, and are equally wholesome.—*Withering*.

59. Purging flax (*linum catharticum*); in pastures on this farm: an infusion of two drams or more of the dried leaves is an excellent purge.—*Withering*.

60. Sundew (*drosera rotundifolia*); on Birmingham-heath: the juice that exudes from this plant will destroy warts and corns; some ladies know how to mix it with milk, so as to make an innocent and safe application, to remove freckles and sunburn: if a fly lights on the leaves of the drosera, it is said to be held fast by its clammy juice, till the leaf contracts, so as completely to enfold the insect, where it will in a short time perish; whence it may be termed the British fly-trap.—*From Withering.*

61. Snowdrop (*galanthus nivalis*); in orchards; a beautiful early flower, of welcome appearance, as fortelling the approach of spring (Fair maids of February) —*Withering.*

62. Daffodil (*narcissus pseudo-narcissus*); orchards, hedges, and meadows; the fresh roots are acrid.—*Withering.*

63. English hyacinth or harebell (*hyacinthus non scriptus*); hedges, very common; the fresh roots are poisonous, and may be converted into starch.

64. Lily of the valley (*convallaria majalis*); in Rough-park, near Needwood-forest.—*Rev. Mr. Gisborne.*

65. Myrtle flag (*acorus calamus*); banks of rivers near the river at Tamworth, at the bottom of Mr. Oldershaw's garden: the root powdered might supply the place of our foreign spices; it is our only native true aromatic plant.—*Linnæus in Withering.*

66. Barberry (*berberris vulgaris*); hedges near Aldridge, and elsewhere: this shrub is said to have the quality of blighting the ears of wheat, even to the distance of three or four hundred yards across one or more fields; the leaves and berries are gratefully acid.

67. Water plantain (*alisma plantago*); growing in water; common.

68. Willow herbs (*epilobium hirsutum augustifolium*); a beautiful showy flower, growing in hedges and moist ditches, on this farm and elsewhere (*codlings and cream*).

69. Cranberry (*vaccinium oxycoccus*); on the moist parts of Cannock-heath; they are much esteemed in tarts.

70. Heath (*erica*); the *vulgaris*, *tetralix*, and *cinerea*, are all common on our heaths.

71. Knotgrass (*poligonum aviculare*); road sides, paths, and corn-fields, common; this plant, and several others of the same species, are very productive in seeds, which seem peculiarly the food of small birds, and intended by a bountiful Providence as a principal article in the support of that beautiful part of the animated creation.

72. Herb Paris (*Paris quadrifolia*); hedge side, in a meadow on this farm in plenty; the roots will vomit as well as ipecacuanha, but must be given in a double quantity.—*Linnæus in Withering.*

73. Moschatel (*adoxa moschatelina*); ditch banks on this farm, very early in the spring.

74. Flowering rush (*butomus umbellatus*); in water, about Stafford and Tamworth.

75. Knawel (*scleranthus annuus*); corn-fields on this farm.

76. Stichwort (*stellaria holostea*); hedge sides, early in the spring.

77. Sandwort (*arenaria's*); in various situations.

78. Marsh pennywort (*hydrocotele vulgaris*); said to occasion the rot in sheep; generally found on boggy land.

79. Stone crops (*sedums telephium* and *acre*); even the former growing on roofs in the Moorlands, particularly at Wetton, and elsewhere on mountains and in pastures; the latter on mountains in the Moorlands, and on roofs and walls elsewhere.

80. Wood sorrel (*oxalis acetosella*); woods and hedge banks; the juice is gratefully acid, and a conserve is made from it.

81. Lychnis's of sorts, particularly the (*lychnis flos-cuculi*) or cuckow flower; a ragged red flower in meadows, and the red and white wild campion in fields and hedges (*lychnis dioica*).

82. Mouse ear (*cerastium vulgatum*); in arable and pasture land, common.

83. Spurry (*spergula arvensis* and *nodosa*); common on this farm, on some poor thin arable land, when in tillage; very prolific in seeds, which are eaten by small birds.

84. Purple spiked willow herb (*lythrum salicaria*); on moist ground; a showy flower.

85. Agrimony (*agrimonia eupatorium*); hedge sides.

86. Dyers weeds (*reseda luteola*); in the lime-works at Dudley, and at Hay-head in plenty: this plant is used in dying.

87. Spurges (*euphorbias exigua* and *helioscopa*); devil's milk; in gardens and corn-fields, common.

88. House leek (*sempervivum tectorum*); on roofs and walls.

89. Prunus's; the bird cherry (*prunus padus*); is a beautiful flowering shrub, growing on this farm, also on Bushbury-hall farm, about Shelford near Walsall, and in the Moorlands: the wild plum, the bullace, and the sloe (*prunus domestica, insititia*, and *spinosa*), are also common in hedges.

90. Hawthorn (*cratægus monogynia*); the staple of modern fences, common every where.

91. Wild service (*cratægus terminalis*); a rare shrub, worthy a place in pleasure grounds; spontaneous on this farm.

92. White beam, or wild pear (*cratægus aria* or *aria theophrasti*); in Dove dale, and elsewhere in the Moorlands.—*Mr. Sneyd.*

93. Mountain ash (*sorbus aucuparia*); a hardy shrub, common in hedges; but flourishing well on rocky and bleak hills.

94. True service, or sorb (*sorbus domestica*); in the Moorlands of Staffordshire.—*Withering's Botany.*

95. Crab-tree (*pyrus malus*); in hedges; the acid juice called verjuice, is a good astringent, or repellent, and used in strains; with a proper addition of sugar, a grateful liquor may be made of it, little inferior to old hock.—*Withering.*

96. Rose, sweet briar (*rosa rubiginosa*); and dog rose (*rosa canina*), in hedges; the leaves are a good substitute for tea.

97. Brambles, including the raspberry (*rubus idæus*); and the blackberry (*rubus fruticosus*); in hedges and woods.

98. Strawberry (*fragaria vesca*); in hedges and woods. Mr. Sneyd of Belmont observes, that all the strawberry kinds termed hautboys, are dioica plants; and unless they are planted judiciously, with a few males interspersed amongst the females (both easily distinguished) will prove abortive; by neglect of this, the males being the strongest plants, and shooting out the most vigorous runners, will in a few years overpower the females; gardeners then call them barren, but do not know why, and root out all

the males, which does not, however, mend the matter.

99. Barren strawberry (*fragaria sterilis*); hedge banks; is this totally barren, or a male hautboy?—*W. P.*

100. Tormentil (*tormentilla reptans*); in woods and moist old pastures, common.

101. Herb bennet (*geum urbanum*); woods and hedges.

102. Water avens (*geum rivale*); one of the most elegant wild plants of this island, grows about Ilam.—*Rev. Mr. Gisborne*; also in meadows near Shenstone.

103. Marsh cinquefoil (*comarum palustre*); in muddy and boggy ponds; in this neighbourhood frequent.

104. Celandine (*chelidonium majus*); in hedges: the juice is very acrimonious, and will cure warts, and the itch.—*Withering*.

105. Water lily (*nymphæa-lutea* and *alba*); in rivers.

106. Lime tree (*tilia europæa*); a timber tree, common in groves and plantations.

107. Dwarf cistus, or little sunflower (*cistus helianthemum*); near Thor's-house Cavern; Moorlands.

108. Spearwort (*ranunculus flammula*); in boggy ground, and near water: it is very acrid; externally applied, it inflames and blisters the skin; its acrimony arises in distillation. The distilled water of this plant (like white vitriol) will operate as an emetic, the instant it is swallowed; and in case of poison, or other circumstances, in which it is desirable to make a patient vomit instantaneously, it is preferable to any other medicine yet known.—*Withering*. The plant is common in this neighbourhood.—*W. P.*

109. Water crowfoot (*ranunculus aquatilis*); plant growing in water, flowers white.

110. Pilewort (*ficaria verna*); hedge banks and pastures, early in the spring, flowers yellow.

111. Bugle (*ajuga reptans*); the roots are astringent.

112. Wood sage (*Teucrium scorodonia*); ditch banks and thickets.

113. Water mint (*mentha aquatica*); watery places.

114. Ground ivy (*glecoma hederacea*); hedge banks. A decoction of this plant, is sometimes drank in the spring as a sweetener of the blood: the expressed juice, mixed with a little wine, and applied morning and evening, destroys the white specks upon horses' eyes. —*Withering.*

115. Nettle hemp (*galeopsis tetrahit*); corn-fields and gardens.

116. Yellow dead nettle (*galeobdolon luteum*); about Sedgeley frequent.

117. Betony (*betonica officinalis*); in woods and shady places, common.

118. Hedge nettle, or woundwort (*stachys sylvatica*); in hedges.

119. Stinking horehound (*ballotta nigra*); on rubbish and in hedges.

120. Wild thyme (*thymus serpyllum*); heaths and road sides, in the south part of the county.

121. Hooded-willow herb (*scatellaria galericulata*); on a moist ditch bank on this farm.

122. Selfheal (*prunella vulgaris*); meadows and pastures.

123. Cow-grass, or cow-wheat (*melampyrum pratense*); common in woods, and I have found it in pasture land.—*W. P.* Where this plant abounds, the butter is yellow, and uncommonly good; cows are very

fond of it.—*Withering*. It is very probably worthy of cultivation.

124. Snap-dragon (*antirrhinum majus*); a beautiful flower, abounding on the walls of Rushall-castle, near Walsall.

125. Toad flax (*antirrhinum linaria*); common in hedges: an infusion of the leaves is diuretic and purgative; the expressed juice mixed with milk, is a poison to flies.—*Withering*.

126. Figworts (*scrophularia aquatica* and *nodosa*); in most places. Withering says, swine that have the scab are cured by washing with a decoction of the leaves.

127. Fox-glove (*digitalis purpurea*); a showy plant, very common here: a very active medicine.—*Withering*.

128. Whitlow-grass (*draba verna*); walks and dry pastures; a good diminutive plant, very early in spring in flowers: it is good as a salad, but must take a good deal of time to gather a moderate quantity.

129. Coralwort (*dentaria bulbifera*); hedge sides on this farm.

130. Water-cress (*sysimbrium nasturtium*); in springs and rivulets: an early and wholesome spring salad; antiscorbutic and stomachic.

131. Hedge mustard (*erysinum officinale*); road sides and hedges; the juice of this plant is beyond any thing in ulcers of the throat.—*Withering*.

132. Jack-by-the-hedge (*erysinum alliaria*); hedge banks near Wolverhampton; very common, luxuriant, and early in the spring: the leaves eaten in Prussia with salted meats; they are useful with lettuce, and the colder salads.—*Withering*. I think they require

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quire a good stomach, having a very rank garlic flavour.—*W. P.* The seeds excite sneezing.

133. Gilliflower (*cheiranthus cheiri*); on old walls, particularly on the moat walls at Perry-hall.

134. Codded mouse ear (*arabis thaliani*); dry pastures on this farm, very early in the spring.

135. Geraniums, various sorts, hedge banks and pastures.

136. Common mallow (*malva sylvestris*); road sides and hedges, common.

137. Musk mallow (*malva muschata*); hedge sides, common.

138. Common fumitory (*fumaria officinalis*); in gardens, hedges, and corn-fields.

139. Lesser bulbous fumitory (*fumaria bulbosa minor*); stem, simple, erect; flowers and leaves much larger than those of any other British species; has never before appeared in print, as an English plant. I found it growing last spring in Perry-park, between the mansion and the river; and from specimens sent to Dr. Withering, it will be accurately described in the next edition of his Botany.

140. Milkwort (*polygala vulgaris*); mountainous, healthy pasture, near Cheadle; limestone-hills, Sedgeley.

141. Broom (*spartium scoparium*); dry pastures.

142. Dyers' broom (*genista tinctoria*); in some pastures.

143. Hairy greenweed (*genista pilosa*); on a gravelly bank on this farm.

144. Gorse, or furze (*ulex europæus*); heaths and uncultivated ground.

145. Creeping restharrow (*ononis repens*); road

side near Himley; the other restharrow was named before.

146. Melilot (*trifolium melilotis officinalis*); this plant is not very common in this county; but I have seen specimens of it growing in Stafford field, and again between there and Eccleshall; I have sometimes wondered that it has been taken so little notice of as an agricultural plant, being the most luxuriant of all our trefoils, and the most tenacious of growth. Horses are extremely fond of it; this I have often remarked; cows, sheep, and swine eat it. Linnæus calls it an annual plant, Hudson a biennial, and Berkenhout a perennial; in some parts of the counties of Rutland and Bedford, particularly the former, it is so abundant amongst wheat and other grain, that I have been assured on the spot, the drawing it out as a weed has frequently cost five or six shillings per acre; hence I should suppose it a perennial. This circumstance may perhaps be a sufficient warning against introducing it upon arable land; yet a plant so tenacious of growth, and acceptable to cattle, may possibly be a good addition to our meadow and pasture herbage.

147. Kidney vetch, or lady's finger (*anthyllus vulneraria*); Goscott near Walsall, and on Bar-beacon.

148. St. John's wort (*hypericum perforatum*); thickets, woods, and hedges.

149. Tutsan (*hypericum androsæmum*); a beautiful flower, in hedges and waste baulks on this farm.

150. Marsh St. John's wort (*hypericum elodes*); on a wet common, called Calf-heath, in a place where, from its situation, it must be some months in the year under water.

151. Corn sow-thistle (*sonchus arvensis*); corn-fields and ditch banks.

152. Common sow-thistle (*sonchus olaraceus*); on cultivated ground; the leaves are good as a pot-herb, and a favourite food with hares and rabbits.

153. Hawkweed (*hieracium*); in woods and hedges.

154. Burdock (*aretium lappa*); ditch banks, and amongst rubbish. Before the flowers appear, the stems, stripped of their rind, and boiled, eat like asparagus; when raw, they are good with oil and vinegar. A decoction of the roots is equal or superior to sarsaparilla.—*Withering*.

155. Double tooth (*bidens cernua*); wet ditches.

156. Hempweed (*eupatorium cannabinum*); in moist ditches, and sides of brooks.

157. Tansy (*tanacetum vulgaris*); road sides, and banks of rivers. If a dead animal substance is rubbed with this plant, the flesh-fly will not attack it.

158. Wormwood (*artemisia absinthium*); road sides and rocky places; very bitter; the leaves put into sour beer soon destroy the acescency; they resist putrefaction, and are a principal ingredient in antiseptic fomentations. An infusion is a good stomachic, but will, like other bitters, weaken the nervous system.—*Withering*.

159. Mugwort (*artemisia vulgaris*); ditch banks.

160. Cudweed (*graphalium germanicum*); in pastures on this farm, good for cattle that have the bloody flux.

161. Ragwort (*senecio Jacobæa*); sides of roads and hedges.

162. Water groundsel (*senecio aquaticus*); moist ground.

163. Middle elecampane, or flea-bane (*inula dysenterica*); on moist land on this farm.

161. Fever-

164. Feverfew (*matricaria parthemium*); hedges, waste places, and on walls.

165. Chamomile (*anthemis nobilis*); in the road between Cannock and Rudgeley, a little to the south-west of the Hedgford finger-post.

166. Sneezewort (*achillea ptarmica*); in moist pastures on this farm, and elsewhere.

167. Knapweed (*centaurea*); various sorts, road sides, and in corn-fields.

168. Violet (*viola odorata*); ditch banks.

169. Pansy (*viola tricolor*); corn-fields.

170. Cows and calves (*arum maculatum*); hedge banks: starch may be made from the roots.

171. Duckmeat (*lemna*); in ditches and ponds: ducks are exceedingly fond of all the species.

172. Catstail (*igpha latifolia*); marshy places.

173. Burr reed (*sparganium erectum*); watery places on this farm.

174. Birch tree (*betula alba*); a hardy tree, growing in all kinds of soil, but best in shady places.

175. Alder (*betula alnus*); succeeds best near water: the wood will endure long under ground or in water.

176. Nettle (*urtica dioica*); ditch banks, and amongst rubbish: its stinging properties are well known.

177. Chesnut tree (*fagus castanea*); hedges, and in plantations: a timber tree.

178. Beech tree (*fagus sylvatica*); a large timber tree, common in hedges and plantations.

179. Hornbeam (*carpinus betulus*); a tree not very common here, but I have seen a few specimens of it.

180. Hazel (*corylus avellana*); in woods and hedges: the shrub, and its fruit, the nut, are well known.

181. Sweet willow (*salix pentandra*); hedges and sides of brooks, near the east gate, Stafford.

182. Sallow (*salix caprea*); a variety of this shrub, called, here, withy, with narrow or small leaves; is very common in this county in hedges, on most sorts of land, moist or dry. If a stake of it be driven into the earth, it in general grows; but is too crooked to be of much use, except for fuel; when straight and kind, it makes good staves, being very tough.

183. Dwarf willow (*salix repens*, or *fusca*, or both); on marshy ground on this farm.

184. Osier (*salix viminalis*); willow beds, woods, and hedges; baskets and bird cages are made of the twigs.

185. White willow (*salix alba*); the largest tree of the species, hedges and sides of rivers: it grows quick, and bears lopping.

186. Mistletoe (*viscum album*); on apple trees, in some parts of the country adjoining Shropshire, where it is still more common.

187. Hop (*humulus lupulus*); in hedges, at Whittington and elsewhere: the young shoots are eaten early in the spring as asparagus.

188. Black briony (*tamus communis*); thickets and hedges: the young shoots are good, dressed like asparagus.

189. Poplars, and aspen tree (*populus alba*) white poplar; (*populus nigra*) common poplar, and *populus tremula*) asp, or aspen tree; succeed best on moist situations, though the white poplar does well on dry land.

190. Yew tree (*taxus baccata*); in hedges: the loppings, in a half dried state, have frequently been fatal to horses and cattle.

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191. Common briony, wild vine (*bryonia dioica*), in hedges near Lichfield.

192. Cross' wort (*valantia cruciata*); baulks, by hedge sides.

193. Pelitory of the wall (*parietaria officinalis*); on dry ditch banks; and old walls; on the gateway leading to Lichfield minster.

194. Sycamore tree (*acer-pseudo-platanus*); in hedges: a hardy tree, and has succeeded well on black mountains, as I have been informed.

195. Maple (*acer campestre*); in hedges.

196. Ash tree (*fraxinus excelsior*); in woods and hedges. The wood of this tree being stout and tough, is the best of all others for ploughs, and most farming implements: this tree is injurious to arable or pasture lands, the roots running near the surface, and extending to a great distance; it should therefore be planted in clumps or coppices.

197. Corn horsetail (*equisetum arvense*); a troublesome weed on some moist arable land; not easily destroyed.

198. Marsh horsetail (*equisetum palustre*); in marshes and watery places.

199. Rough horsetail, or shave-grass (*equisetum hyemale*); on Prestwood farm, near Wednesfield; used by turners and cabinet makers to smooth their work.

200. Adder's tongue (*ophioglossum vulgatum*); meadows near Blimhill, and in the Moorlands.

201. Club moss (*lycopodium clavatum*); on Cannock-heath.

202. Spleenwort, or hart's-tongue (*asplenium scolopendrium*); mouths of wells, ditch banks, old walls, and rocks.

203. Polypody (*polypodium vulgare*); on old walls, shady places, and at the roots of trees.

204. Mosses (*musci*); in great variety on trees, roofs, commons, and worn-out pastures, which should then be top-dressed, or ploughed up.

205. Lichens; a numerous tribe of diminutive plants, growing on the trunks and bark of trees; heaths, old walls, pales, rocks, large stones, and the summits of high mountains; many of the species are used in dyeing.

206. Star jelly (*tremella arborea*, and *nostoc*); the former on rotten wood, the latter in mossy ground; is vulgarly supposed the remains of a falling star, but described by botanical writers as a true vegetable.

207. River-weed, or crowsilk (*conferva rivularis*); in rivulets under water.

208. Paper byssus (*byssus flos-aquæ*); on stagnant water. Some years ago a pond on this farm, soaking away in summer, from under a profusion of this vegetable production, the whole was left formed into a substance resembling coarse paper, covering the whole surface of the pond; a small specimen of which I have preserved, and it is capable of being wrote upon.

209. Agaricus's; an extensive and numerous species, in general remarkable for quick growth, and sudden decay. The mushroom (*agaricus campestris*), one of the few of this species used as food, is well known at table, and plentiful in old pastures.

210. Stinking morel, or pole-cat (*phallus impudicus*); in thickets.

211. Puff-ball (*lycoperdon proteus*, or *bovista*); on this farm, most common on drained peat; and sometimes eight or nine inches diameter.

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The above are our most remarkable, and common, indigenous vegetable productions, so far as comes under my observation, besides those mentioned before as agricultural plants, weeds, or of local growth: but it is very probable many may have been overlooked. The Writer is often indebted to Withering's Botany, for their uses.

A List of the commonly cultivated Plants of this County, with the Generic and Specific Names of Linnæus, not given before.

1. Wheat	*Triticum æstivum.*
2. Rye	*Secale cereale.*
3. Barley	*Hordeum vulgare.*
4. Six rowed ditto	*Hordeum hexastichon*, has had some small trials.
5. Oats	*Avena sativa.*
6. Beans	*Vicia faba.*
7. Pease	*Pisum sativa* and *arvensis.*
8. Vetches	*Vicia sativa*, very improperly called tares, the latter being a different species.
9. Buck-wheat	*Polygonum fagopyrum.*
10. Hemp	*Cannabis sativus.*
11. Flax	*Linum usitatissimum.*
12. Turnips	*Brassica rapa.*
13. Potatoes	*Solanum tuberosum.*
14. Cabbages	*Brassica arvensis.*
15. Rape	*Brassica napus.*

Garden Plant.

16. French beans	*Phaseolus vulgaris* and *nanus.*
17. Carrot	*Daucus carota.*

18. Parsnip	*Pastinaca sativa.*
19. Beet	*Beta vulgaris, cicla* and *maritima.*
20. Spinach	*Spinachia sativa.*
21. Savoys, &c.	*Brassica oleracea.*
22. Artichoke	*Cynara scolymus.*
23. Lettuce	*Lactuca sativa.*
24. Cresses	*Lepidium sativum.*
25. Salad mustard	*Sinapis alba.*
26. Leek	*Allium porrum,* or pot garlic.
27. Garlic	*Allium sativum.*
28. Onion	*Allium cepa.*
29. Cives	*Allium tenuissimum.*
30. Rocambole	*Allium oleraceum.*

The last five are all of the garlic species.

31. Asparagus	*Asparagus officinalis.*
32. Radishes	*Raphanus sativus.*
33. Parsley	*Apium petroselinum.*
34. Mint	*Mentha sativa.*
35. Celery	*Apium graveolens.*
36. Endive	*Cichorium endivea.*
37. Cucumber	*Cucumis sativus.*
38. Melon	*Cucumis melo.*
39. Horse-radish	*Cochlearia armoracia.*
40. Pompion, or gourd	*Cucurbita,* several sorts.

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The most common Fruits, not named before.

41. Vine	*Vitis vinifera.*
42. Apple	*Pyrus malus.*
43. Pear	*Pyrus communis.*
44. Plum	*Prunus domestica.*
45. Cherry	*Prunus cerasus.*
46. Apricot	*Prunus armeniaca.*

47. Peach

47. Peach	*Amygdalus persica.*
48. Almond	*Amygdalus communis.*
49. Fig	*Ficus.*
50. Walnut	*Juglans.*

Garden Flowers most commonly cultivated, including some Medical Plants, Trees, and Shrubs.

51. Auricula	*Primula auricula.*
52. Tulips	*Tulipa.*
53. Jessamine	*Jasminum officinale.*
54. Rosemary	*Rosmarinus officinalis.*
55. Crocus	*Crocus vernus.*
56. Jacob's-ladder	*Polemonium cæruleum.*
57. Venus's Looking Glass	*Campanula speculum.*
58. Fennel	*Anethum fœniculum.*
59. Narcissus	*Narcissus poëticus.*
60. Jonquill	*Narcissus jonquilla.*
61. Lilies of sorts	*Amaryllis's, liliums,* and *convallaria.*
62. Crown imperial	*Fritillaria meleagris.*
63. Bethlehem-stars	*Ornithogalums.*
64. Polianthes	*Polianthes tuberosa.*
65. Hyacinths	*Hyacinthus's,* sorts.
66. Bay	*Laurus.*
67. Rhubarb	*Rheum, rhabarbarum,* and *palmatum.*
68. Rue	*Ruta graveolens.*
69. Pink, Carnation, & Sweet-william	*Dianthus's.*
70. Campions	*Cucubalus's,* many sorts.
71. Lychnis's	many sorts.
72. Laurel	*Prunus lauro cerasus.*

73. Pæony	*Pæonia officinalis.*
74. Columbine	*Aquilegia vulgaris.*
75. Anemones	many sorts.
76. Ranunculus's	many sorts.
77. Savory	*Satureia hortensis.*
78. Hyssop	*Hyssopus officinalis.*
79. Lavender	*Lavendula.*
80. Hibiscus	*Althea frutex.*
81. Lupine	*Lupinus*, several sorts.
82. Laburnum	*Cytisis laburnum.*
83. Old-man	*Artemisia abrotanum.*
84. Sun-flower	*Helianthus.*
85. Jerusalem Artichoke	*Helianthus tuberosus.*
86. Violet	*Viola's* many sorts.
87. French marigold	*Calendula.*
88. Indian corn	*Zea mays.*
89. Amaranthus's	many sorts.
90. Ever-green oak	*Quercux Ilex.*
91. Plane-tree	*Platanus orientalis.*
92. Cedar	*Pinus cedrus.*
93. Larch	*Pinus larix.*
94. Savin	*Junipers sabina.*
95. Juniper	*Juniperus communis.*
96. Horse-chesnut	*Æsculus hippocastanum.*
97. Hollyhock	*Alcea rosea.*
98. Lilac	*Syringa persica.*
99. Stock July flower	*Cheiranthus.*
100. Marjoram	*Origanum marjorana.*
101. Balm of Gilead	*Dracocephalon.*
102. Scurvy-grass	*Cochlearia officinalis.*
103. Box	*Buxus sempervirens.*
104. Thrift	*Statice armeria.*
105. London-pride	*Saxifraga umbrosa.*

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On making Starch from Vegetables.

As in the present scarcity of bread corn, and in all similar cases, and indeed in every case, it seems to be an object deserving attention, to search out substitutes for those articles of manufacture which (though not used as food), have generally been prepared from wheat; and Dr. Withering having stated in his botanical arrangement, that starch may be prepared from the roots of the Arum, and of the English hyacinth, I took the liberty to write to him on the subject, and have received the following for answer.

"Though starch may be made from the roots of Arum and the hyacinth, it is a doubt with me whether it can be done in this kingdom profitably: in countries where living is much less expensive, and wages much lower, many points like this may be carried into effect, which would not answer here. I believe that the starch from potatoes has never yet been a saleable article, so as to stand in competition with that from wheat. It is not in my power to inform you of the expense of making starch from either the one or the other; but this may be learned, however, it can never be an object whilst the distilleries are allowed to destroy so much wholesome corn, and convert it into ruinous spirits: to say nothing, though so much might be said, of the mischiefs of dram-drinking to the health and to the morals of mankind. The revenue obtained from distilleries, though it should equal 7 or 800,000*l.* annually, is a revenue founded on bad policy, so long as we are obliged annually to import corn to a greater amount, which has been the case for many years back."

On the subject of making starch from the above vegetable roots, I have to observe, that the plants in question are both extremely common; and the roots being bulbous and productive, might be collected in considerable quantities by women and children. In a ride in the month of April last, of more than 300 miles, I observed the Arum every where; and the hyacinth is to be found in great plenty in hedge banks, woods, and waste places, and often in meadows, where it is no desirable plant. It is therefore submitted to the Board, to consider the propriety of encouraging the production of starch from these plants, by bounties or premiums, more especially as they are produced spontaneously in great abundance, and are at present applied to no use whatever.

In a subsequent letter, Dr. Withering says, "On the subject of making starch, I think the Society for the Encouragement of Arts, might be induced to offer their premium, it being perfectly consistent with their plan." Perhaps it might be right for some gentleman, who is a member of the Board, and of that Society, to propose this particular subject in their next offer of premiums. These observations will equally apply to the making of starch from any other vegetable, not being a leading article of food; as well as to the production of hair-powder, paste, and other articles generally made from wheat.

RECAPITULATION.

Upon a retrospective view of the present state of the county, it will appear that Staffordshire has begun to improve; and it may be added, has made some progress in improvement: that some of its intelligent and active cultivators (for such there are) have brought their farms to a pretty correct state of good cultivation, but none have by any means approached perfection; not even that perfection which they are sensible is in their power. Much remains to be done, even by those who have made the greatest efforts, and most successful exertions; and even these, are the persons who are the most sensible that we are in the infancy of agricultural improvement; who find, the more they do, the more wants doing, as one improvement paves the way to another. Much of the land of this county remains in a medium state of management much below mediocrity, and large breadths of enclosed land have never been improved at all. If to this we add our extensive wastes, unenclosed, unimproved, and uncultivated, we shall have a large set-off against our superior management, before exhibited. Upon the whole, to the eye of an intelligent agricultural stranger, familiar with a country highly cultivated, and capable of taking in at once a general view of the county, it would convey the idea of a country just emerged, or emerging, from a state of barbarism: and indeed the idea would be just, for such was very recently the state of this county; and the practice of barbarous ages may be said to be but very lately (if yet) wholly exploded. In the limits of my own observation, which can little exceed thirty years, I have known the following, a common practice on the best lands: 1. fallow; 2. wheat; 3. barley; 4. oats; and often oats repeated, and then left to Nature; the worst lands left to pasture and spontaneous rubbish: turnips and artificial grasses, scarcely at all known in farming, though now fully introduced. The person who first cultivated ray-grass in this county, and first sold the seed in Wolverhampton market, was an uncle of mine, now living; he sold the seeds of clovers and trefoils at the same time; since when, the demand for these seeds is increased, I suppose, an hundredfold. The rents of land were then about an half of the present rents, and the population of the country not in a much higher proportion; the roads were scarcely passable, and many of the best farms were in the hands of the owners, who were unable to get tenants for them; and all this was the case within less than half a century of the present time. If it be observed, that notwithstanding the capital improvements herein stated to have taken place, a scarcity, even approaching a famine, has lately been experienced, and the prices of every article of provision has been higher than ever known before; I answer, that years of scarcity have been common in every period of our history, and have several times occurred in the memory of the present generation; that they do not happen more frequently now, than in former times; that the price of wheat and other provisions, having been higher lately than ever known before, is rather ideal and nominal, than real fact; as the alteration of the value of money within the last thirty or forty years, will account for the apparently different high prices, which are not comparatively more different now, and then, than the comparative difference in the value of money at the different periods. That an acre of land, which is not naturally or intrinsically of more value now, than then, will sell for twice as much money. That it is not in human power to counteract the course of Nature; and in regard to producing plenty in years of scarcity, it cannot be done otherwise than by previously storing the surplus of plentiful seasons. That the improvements above stated, have only taken place on a proportion of our land; and have not increased our produce more than sufficient to answer the increased consumption of our greater population, combined with the liberal modes of living introduced by an increasing property, and now become much more general than formerly: and that the natural and obvious way of increasing the supply is, by an increased, extended, and improved cultivation; in all which particulars, much indeed remains to be done.

Being upon the subject, it seems a proper place to introduce an observation which I had like to have forgot, and the omission of which would have been almost unpardonable; namely, that in most parts of this county, there are evident marks of a cultivation far more extended than any thing known in modern times; most of our commons and waste lands have on them evident marks of the plough; marl and clay pits of great size are to be found in most parts of the county where those substances abound, and evidently made for manure. I have observed on the rubbish or spoil of these pits, timber trees of from one to two hundred years growth. No history I have read, or tradition I have heard, give any insight into the time when these exertions were made; but the traces of them are evident; and from their extent, it is equally so, that a greater strength has been employed in the cultivation of land, in some distant period, than is at present, or has been in the memory of the present generation; but from the present appearance of such common lands, and their sterile and unproductive state, it should seem that no attention was paid to drainage; and that very probably the land was cropped as long as it would bear it, and then left to Nature. The time in which this business was done, I should conjecture to have been in the long peace preceding the civil wars of Charles the First, in which the population of the kingdom would probably be much increased, and manufactures not being then much established, the natural employment of such population would be in agriculture. When the business is resumed, I hope it will be upon a system, that will preclude the possibility of the land again returning to a state of Nature; to effect which, the first steps must be, enclosure and drainage, where necessary; afterwards cleaning, pulverization, and manure, with tender cropping, and laid to pasture for a time, with plenty of seeds; after which, a judicious and sparing system of cropping may be repeated, with due attention to the staple and nature of the soil; and afterwards laid to pasture as before.

AGRICULTURE OF STAFFORDSHIRE.

The following remarks and observations have been received, or made, since the work has been in the press, and are therefore added to the Appendix. Some anonymous remarks have also been received, to which the same attention cannot be paid, unless the gentlemen who made them would please to give in their names and address; as some things in such remarks want rectifying, which the Writer of this cannot do without consulting their author.

LAYING LAND TO GRASS.

"I have seen a field this summer (1795), on a strong soil, which was laid down with 4lb. per acre of *trifolium flexuosum*, 4lb. of white clover (*trifolium repens*), and 4lb. of burnet; it is an incomparable pasture, belonging to Henry Crockett, Esq. of Shussions, near Church-Eaton, in this county. Mr. Crockett thinks very highly of this clover, the seed of which he purchased in London at a reasonable price, by the name of cow-grass."—*Rev. Sam. Dickenson.*

"I have to observe, that the produce of the seed bought for cow-grass, has generally left the ground, at the end of two years, in the same manner with the common biennial clover; the seed of the true perennial plant would doubtless be a great acquisition; also that 4lb. per acre of burnet is by no means enough; 20lb. per acre, at least, should be sown."—*Will. Pitt.*

DRILLING.

"In light, sandy, or meagre soils, which constitute a great proportion of the land best adapted to the drill husbandry, there is little doubt but seven inches interval of the drills is, in the culture of wheat or barley, preferable to nine inches; the difference of produce will probably be found, upon a fair trial, to be several bushels per acre, in this kind of land; as by the approximation of the rows, the plants in a hot dry season will be better protected from the scorching effects of the solar heat. As the ascertaining of this point is of great importance at a time when the drill husbandry is practised to so great an extent, and moreover may probably

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probably be adopted in the culture of the waste lands, a large proportion of which are, in respect of soil, of the above-mentioned quality: the promoting of the necessary trials for ascertaining this point in a variety of soils, appears not unworthy the attention of the Board of Agriculture; and in case drills of seven inches interval shall in general prove more productive than those of nine inches, it will be a sufficient inducement with Mr. Cook, to make the necessary alteration in the construction, at least of a part, of his patent drill machines; that so, every farmer may be accommodated with such as best suits the nature of the soil he has to cultivate."—*Rev. Sam. Dickenson.*

SOWING GRASS-SEEDS WITH DRILLED BARLEY.

" Grass-seeds may be sown on land where barley is drilled, and all the advantages of hoeing retained: for this purpose my practice is, to omit sowing these seeds for a month at least after the barley has been sown, and when it has attained the height of four inches, then is the time to hoe the ground; and if the drills are at the interval of seven inches, the hoe should be four inches in breadth: this operation answers many valuable purposes, it destroys the young crop of weeds, and in case (which frequently happens in our wet climate) a hard crust be formed on the surface by immoderate rain, it pulverises the soil, and at the same time covers the grass-seeds instead of harrowing; a farther advantage of vast importance accrues from this practice, the clover or grass-seeds being sown so late, their growth at the time the barley is mown will be so diminutive as not to retard the carrying of the barley; whereas in the common method, the clover is often so luxuriant at the time of harvest, and being withal a very succulent plant, it often retards the getting of the barley till such time as it receives considerable damage, or sometimes is entirely spoiled; but as hoeing is attended with no small expense, and hands are not always to be procured to perform the operation in due season, I this year (1795), instead of hoeing, harrowed in the grass-seeds with a pair of light harrows, drawn by a single horse, which answered all the end of hoeing, without disturbing the rows, or injuring the barley."—*Rev. Sam. Dickenson.*

I have received some ingenious observations from Mr. Towns, a gentleman of the medical profession, at Breewood, Staffordshire; some extracts from which I herewith send, as follow:

DIET AND ECONOMY OF THE POOR.

"I have travelled through most parts of our kingdom, and find the lower classes of people vary much in their manner of living; in the North of England their chief diet is bread and milk, perhaps five days in the week, or curds made from the whey of milk, which I find is not properly made in the South of England: this curd is obtained by old churn milk (butter-milk) poured into whey scalding hot, the acid of which, uniting with the serum, produces a fine, mellow, bland, substance, very wholesome, cooling, and nutritive: upon this diet, and upon bread and milk, the labouring poor in the North of England principally exist; and although they earn less wages than those in the South of the kingdom, their comforts are at least equal, and their distresses perhaps much less in the family way, than those in the South with much higher earnings. Upon this principle it appears, that if our Southern poor could be induced to change their mode of living, their present difficulties would be in a great measure removed. If adults could not be prevailed on, to breakfast and sup on the wholesomest food in Nature (bread and milk), children might; which would be a considerable saving of beer, butchers' meat, cheese, butter, &c. all of which are much dearer; and by inuring children to this diet, they might prefer it when grown up, as a great deal depends on habit;—instance the Northern poor, who eat their bread and milk with the greatest comfort and satisfaction, are more healthy in general, strong, hardy, and well-looking.

"I have acquainted myself a good deal with the manner of life in this neighbourhood (Brewood), and find poor labouring men often dine out of a potatoe-pudding, or early cabbage, washing the same down with some of their own home-brewed beer: now if such men could be prevailed on to partake of milk, they would find their meal equally wholesome and cheaper, as the beer would not be necessary.

"I have asked numbers of children respecting milk, who all seem to be very fond of it; indeed it is a natural diet, but, unfortunately, I find the poor cannot be supplied with milk; farmers and cow-keepers are so impressed with the idea that more can be made of it in the way of butter and cheese: this has induced me to make the experiment of a guinea's worth of new milk, at a penny a quart, which when made into butter and cheese, produced only 19*s.* 4*d.*; although, had the skim-milk been sold at one halfpenny per quart, it would have produced 23*s.*; the cows were at grass, and it was summer cream.

"In the management of workhouses (poor houses, so called) great abuses prevail. In such houses, old people and children ought to eat milk twice a day, and cows should be kept for that purpose, to lessen the enormous consumption of butchers' meat and beer in such houses."

FEEDING OF HOGS.

"I am well convinced from observations which I have made, that these animals are often reared and fatted at the expense of *8d.* per pound, and yet the pork sold out at $4\frac{1}{4}$*d.* or *5d.*: some cheaper mode of feeding them should therefore certainly be adopted, I beg leave therefore to suggest the following for consideration and for trial.

"Butchers sometimes give bullocks' and sheep's blood to their hogs; would it not be much more eligible to mix a certain proportion of vegetable food therein, such as boiled potatoes, turnips, ground oats, and barley? Linseed is also of a very nutritious quality, and should be tried, boiled up in a proper quantity of water, and thickened with any of the aforenamed vegetable substances. Fat meat, of any kind, as it contributes to the fattening of the human creation, should by analogy have the same effect on inferior animals; tallow boiled away in water, and made into a stir-pudding with ground oats, barley, &c. I think merits trial.

"To occasion a plenitude of small potatoes, would it not be a wholesome measure, to compel every occupier of land to plant at least one acre in a hundred with potatoes (by act of parliament), or tax him for the neglect? an act would be necessary to do away the restriction on tenants. I do not see any hardship to the farmer in this, as the land so planted would pay him as well as any other crop."

DISORDERS OF SHEEP.

"I have known oil of turpentine prove successful in the prevention and cure of the rot and dropsy; half a meat spoonful given for a dose now and then, has cured some, and prolonged the lives of others; a dose to every sheep in the beginning of winter is said to be a preventative. Tapping might be of service.

"Sheep dying in the blood may not be so much a disease in the head, as the stomach and bowels, from the acescent diet of clover and turnips. Sharp purges of jalap, black hellebore, and calomel, with bleeding, may be proper; and also sharp aloetic glysters to empty the bowels as soon as possible."

ECONOMY OF HORSES.

"To lessen the consumption of oats, horses ought to be fed with linseed also; five parts oats, and one part linseed."

LIME.

"The good that lime does on light land, is by destroying weeds, grubs, and other insects, and binding it a little; I am of opinion that the best way to use lime on strong stubborn land, would be to lay it on hot from the kiln, broken into small pieces, and slightly ploughed in. In a few days it would open itself and ferment, especially if assisted by a shower of rain, when it could not fail of breaking and pulverising the soil.

"Weeds may be destroyed pretty effectually by the caustic quality of lime, laid upon them after their vegetation, and ploughed down; lime hastens the putrefaction of animal substances, and very probably of vegetable substances also."

DOMESTIC ECONOMY.

"If farmers would give their servants more wages, and less drink, it would be doing both parties a benefit. In the North of England workmen have no ale or beer allowed, except the mowers of hay, and yet are not much afflicted with thirst in working hours; drinking often and much, only occasions more thirst; and the work is not apparently quicker done."

EXPERIMENTAL FARMING.

"It would be a wholesome plan, for the Board to commence farming upon their own ideas, particularly in counties where the modes of agriculture seem improper; for instance, Lancashire, Westmorland, Cumberland, Northumberland, &c.; by which ocular demonstration their plan might be imitated; for reading or hearing of any particular practice will not do for farmers in general."—*Thus far Mr. Towns.*

DRAINAGE WANTED.

"Having occasion lately to attend the Sessions at Stafford, and walking with a gentleman of landed property upon the meadows adjoining the neighbouring rivers, I had an opportunity of observing, that the large tract of flat meadow land between Stafford and St. Thomas's Mill, and also between the said mill and Rickerscote, might be very much improved by drainage.

a considerable proportion of this land is at present in a very rough state, producing rushes, and other coarse and useless aquatics, and being withal (from its starved state) very backward in its spring growth. This tract would be very much improved, and its value highly increased, by cutting a drain of sufficient depth close to the upland, to intercept the springs which now spew out from under it upon the meadows, to their great injury. This scheme of drainage is easily practicable at a trifling comparative expense. A farther great improvement here would be by embanking the rivers, to prevent the great damage often occasioned by summer floods, with sluices through such embankment, to admit the water for irrigation at pleasure; such embankment to be assisted by a weir and floodgates, above St. Thomas's Mill, in the old channel of the river, by which the flood water might be regulated without the least injury to the mill. The river also at present seems much neglected, and the landholders should unanimously join in the annual expense of cleansing it of sedges and weeds, as well as sand-beds, to give the water a free passage. It is requested this may be printed in the Agricultural Survey of the County, as a means of calling the attention of the gentlemen interested, to this subject."

WILLIAM PITT.

May, 1796.

The above proposed drainage and embankment have been since executed; and a cast-iron aqueduct, in a very spirited manner, laid under one of the rivers, to carry off the drain water.

Nov. 1804.

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THE END.

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